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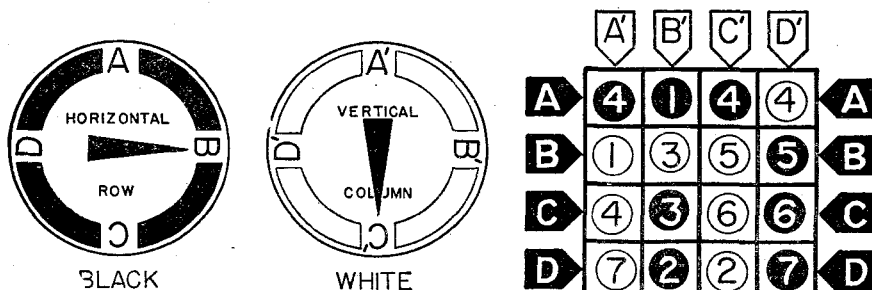
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Though **MATRIX** is an enjoyable game at every level from High School to Doctorate, it teaches fascinating new thought processes as it entertains.

POINT OF DIMINISHING RETURNS

By the nature of things—the definition of the term itself—research is, and must always be, a risky business. If a man knows exactly what he wants, and knows exactly what raw materials he needs, and exactly how to process it, then he need do no research. He isn't a research director—he's a production manager.

But the degree of risk in research varies from infinitesimal to nearly total. Research may involve determining the density of a piece of mineral handed to you. Since the techniques for determining the density of mineralogical samples have been worked out over many years, the only unknown in this problem is the actual value which you are seeking to determine. Here you have $n - 1$ data of the n data required.

The other extreme is represented perhaps by the "flying saucers"; we have the datum: "Some people have seen something." That appears to be the one sound, reliable datum we have. And therefore the problem "Build a flying saucer," would represent a research project in which

we'd have only 1 of the n needed data.

But the problem is a lot more complex than that, when reduced to terms of the simple fact "human beings must do something about it before the problem is solved." Human effort is to be expended; the supply is limited, and the supply of problems available for research and solution several orders of infinity beyond Cantor's aleph-null. We've got to assign a priority to attack on problems. Given five billion dollars, and governmental level authority to draft men and data, the problems of psychology might be solved in five years, let's say. But we could get a space station, and a rocket to the Moon, in five years, if we're allotted \$20 billion, and governmental level authority to draft men and facilities.

Of course, we'll have to take men and facilities from national defense, and from research on civilian goods; there's an acute shortage of competent engineers. And inasmuch as any really big project is inevitably going to have unexpected failures, there will

be, probably, one hundred and fifty human lives sacrificed in the process.

What's the *cost* of the research? Not in dollars—any printing press can run out plenty of symbols for us to play with. But the cost in terms of human effort diverted from other possible projects? Is solving the problem of insanity more or less important than research on industrial personnel placement? Are the two basically distinct? Is guided missile work to have priority in demands on the limited number of available engineers and technical men over fundamental spacecraft research? Is it time to try a manned rocket, or is the cost in human lives still too high?

And each of those problems is, of course, dependent on the risk entailed in the research, vs. the gain to be expected if we succeed, and the further factor of cost-of-failure.

The cost of the research gets tricky because of that last item. Cost isn't in dollars—it has to be in human terms, for the simple reason that human beings, not green-printed slips of paper, are going to do it. We're gambling—and the gamble is with human beings. We're gambling many years of human effort, not dollars. But dollars are a convenient symbol, so that's the most familiar terminology.

Suppose the maximum loss is one thousand units, and the maximum possible gain is ten thousand, while the probability of success—as well as our best analysts can estimate—is about thirty-three per cent. Should

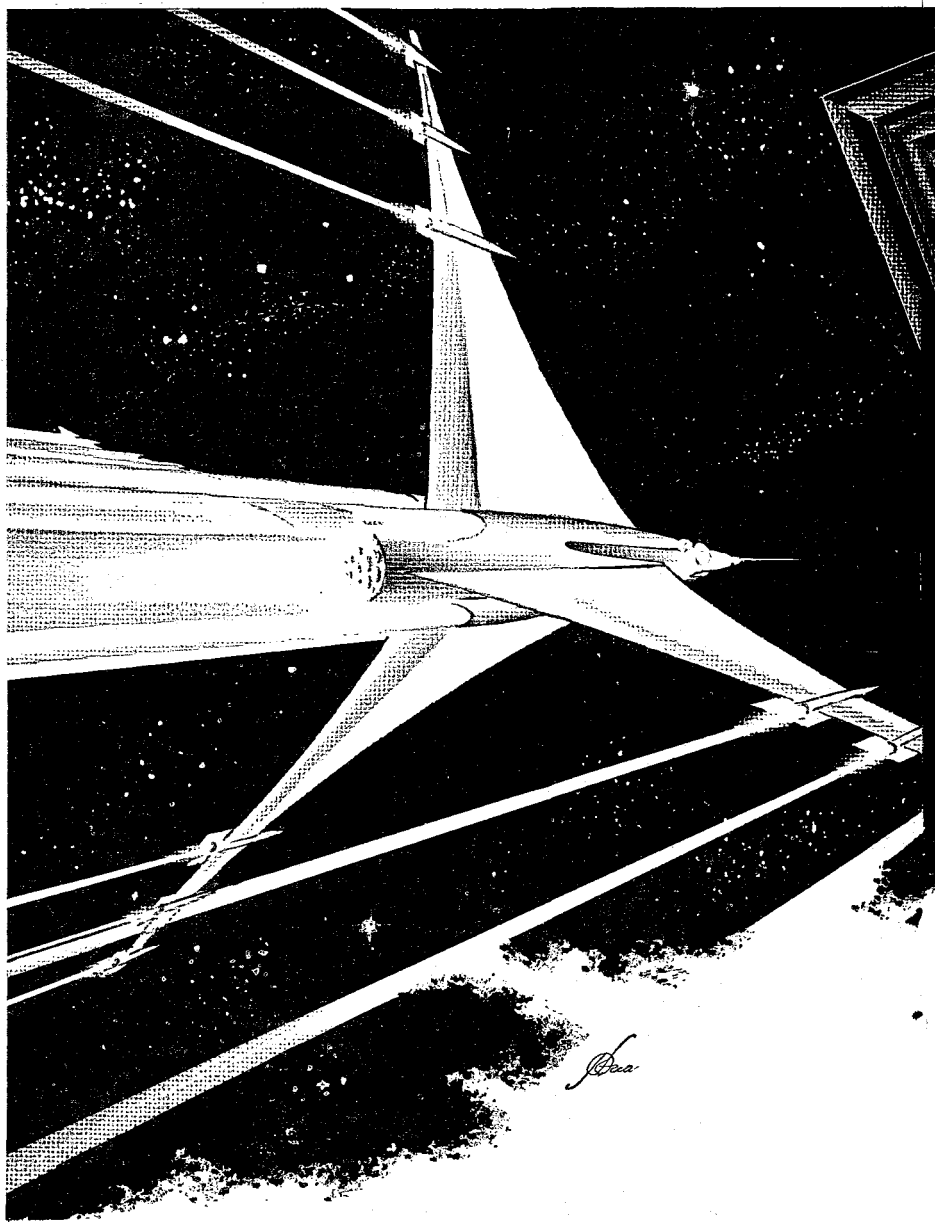
we make the gamble? Certainly—provided we have the one thousand units to put up, plus enough more to stay alive in case we lose the gamble.

It's worth considering "Russian Roulette"; the business of spinning the revolver cylinder with one cartridge, then putting it to your head and pulling the trigger. What pay-off should this gamble yield to make it a sound investment on that five chances in six of winning? If loss of the gamble means total annihilation—it is not sane to gamble. (Unless, of course, *not* taking the gamble also means total annihilation.)

The problem of a research project must include the probability of success, of course; the probable pay-off in event of success; the probable cost of the research—and consideration of the *maximum possible* cost of loss. The automobile race driver must calculate how much it will cost him to get his car, supplies, and staff to the race track, the cost of supplies, and rent on facilities at the race, his chance of success against the probable competition—and the chance that he may have an accident that destroys his car, and kills him.

There is also the problem of the company that starts a major research project, estimating that it will cost \$250,000, and take a year. At the end of two years and \$600,000, they have some very encouraging results—and find that if they abandon the project, they're sunk, while if they can't complete it within six months

(Continued on page 159)





THE LONG WAY HOME

BY POUL ANDERSON

First of Four Parts. Home—as any man discovers sooner or later—isn't a place at all, but a situation. And if the situation has changed . . . you've got to take The Long Way home!

Illustrated by Kelly Freas

I
The spaceship flashed out of superdrive and hung in a darkness that

blazed with stars. For a moment there was silence, then:
"Where's the sun?"

Edward Langley swiveled his pilot's chair around. It was very still in the cabin, only the whisper of ventilators had voice, and he heard his heart thutter with an unnatural loudness. Sweat prickled his ribs, the air was hot.

"I . . . don't know," he said finally. The words fell hard and empty. There were screens on the control panel which gave him a view of the whole sky, he saw Andromeda and the Southern Cross and the great sprawl of Orion, but nowhere in that crystal black was the dazzle he had expected.

Weightlessness was like an endless falling.

"We're in the general region, all right," he went on after a minute. "The constellations are the same, more or less. But—" His tones faded out.

Four pairs of eyes searched the screens with hunger. Finally Matsumoto spoke. "Over here . . . in Leo . . . brightest star visible. Do you see it?"

They stared at the brilliant yellow spark. "It's got the right color, I think," said Blaustein. "But it's an awful long ways off."

After another pause he grunted impatiently and leaned over in his seat toward the spectroscope. He focused it carefully on the star, slipped in a plate of the solar spectrum, and punched a button on the comparison unit. No red light flashed.

"The same, right down to the Fraunhofer lines," he declared. "Same intensity of each line to with-

in a few quanta. That's either Sol or his twin brother."

"But how far off?" whispered Matsumoto.

Blaustein tuned in the photoelectric analyzer, read the answer off a dial, and whipped a slide rule through his fingers. "About a third of a light-year," he said. "Not too far."

"Much too far," grunted Matsumoto. "We should'a come out with in one A.U. on the nose. Don't tell me the engine's gone haywire again."

"Looks that way, don't it?" murmured Langley. His hands moved toward the controls. "Shall I try jumping her in close?"

"No," said Matsumoto. "If our positioning error is this bad, one more hop may land us right inside the sun."

"Which'd be almost like landing in hell or Texas," said Langley. He grinned, though there was an inward sickness at his throat. "O.K., boys, you might as well go aft and start overhauling that rattletrap. The sooner you find the trouble, the sooner we can get back home."

They nodded, unbuckled themselves, and swung out of the pilot room. Langley sighed.

"Nothing you or I can do but wait, Saris," he said.

The Holatan made no answer. He never spoke unnecessarily. His huge sleek-furred body was motionless in the acceleration couch they had jury-rigged for him, but the eyes were watchful. There was a faint odor

about him, not unpleasing, a hint of warm sunlit grass within a broad horizon. He seemed out of place in this narrow metal coffin, he belonged under an open sky, near running water.

Langley's thoughts strayed. *A third of a light-year. It's not too much. I'll come back to you, Peggy, if I have to crawl all the way on my belly.*

Setting the ship on automatic, against the unlikely event of a meteor, Langley freed himself from his chair. "It shouldn't take them too long," he said. "They've got it down to a science, dismantling that pile of junk. Meanwhile, care for some chess?"

Saris Hronna and Robert Matsumoto were the *Explorer's* chess fiends, they had spent many hours hunched over the board, and it was a strange thing to watch them: a human whose ancestors had left Japan for America and a creature from a planet a thousand light-years distant, caught in the trap of some ages-dead Persian. More than the gaping emptinesses he had traversed, more than the suns and planets he had seen spinning through darkness and vacuum, it gave Langley a sense of the immensity and omnipotence of time.

"No, t'ank you." The fangs gleamed white as mouth and throat formed a language they were never meant for. "I would rather this new and surprissing dewelopment consider."

Langley shrugged. Even after weeks of association, he had not grown used to the Holatan character

—the same beast of prey which had quivered nose to spoor down forest trails, sitting as hours went by with dreamy eyes and a head full of incomprehensible philosophy. But it no longer startled him.

"O. K., son," he said. "I'll write up the log, then." He pushed against the wall with one foot and shot out the doorway and along a narrow hall. At the end, he caught himself by a practiced hand, swung around a post into a tiny room, and hooked his legs to a light chair bolted in front of a desk.

The log lay open, held by the magnetism of its thin iron backstrap. With an idleness that was a fight against his own furious impatience, the man leafed through it.

Title page: United States Department of Astronautics, *I/S Explorer*, experimental voyage begun 25 June 2047. Mission: development of the superdrive; secondary mission: gathering information about other stars and their hypothetical planets.

Crew:

Captain and pilot: Edward Langley, age 32, home address Laramie, Wyoming; graduate of Goddard Academy, rank of captain in the Astronautic Service, spaceman since his late teens. Long record as pilot of exploratory trips, including the Mercury run. Medal of Merit for heroism in *Ares* rescue. (*Hell, somebody had to do it, and if they knew how scared I was at the time—*)

Engineer and electronician: Robert Matsumoto, age 26, home address

Honolulu, Hawaii, former space-force marine, present rank A/S lieutenant. Work on Luna, Mars, Venus; inventor of improved fuel injector and oxygen recycler.

Physicist: James Blaustein, age 27, home address Rochester, New York, civilian. Work on Luna for the A.E.C. Politically active. Major contributions to physical theory, creator of several experimental systems for testing same.

Biologist: Thomas Forelli— *Well, Tom is dead. He died on that unknown planet we thought was safe, and nobody knows what he died of—disease, acute allergy, any of a thousand deaths that a billion years of alien evolution could prepare for creatures from Earth. We buried him there, committed his soul to a God who somehow seemed very far away from that green sky and talking red grass, and went on. It's going to be hard to tell his people.*

Langley's eyes raised themselves to the photograph above the desk. The red-haired girl smiled at him across a mist of years and leagues. *Peggy, darling, he thought, I'm coming home.*

She would have grown thin, poor kid, and though she said nothing there would be an emptiness of long nights within her, and she would often hold their child—the child he had never seen—close to her. Space-men had no right to get married. Still less did they have a right to venture beyond the sun, riding a witch's broom of a ship whose engine no one really understood. But

when the offer came to Langley, she had seen the enormous hunger in his eyes and told him to go. Pregnant and unsure, she had still given him to the high stars and herself to aloneness.

*"O wha is this has done this deed,
And tauld the king o' me,
To send us out, at this time of the
year,
To sail upon the sea?"*

None but myself, he thought.

Well, this was the last time. He was getting too old for the work, his strength and speed imperceptibly lessened, and there was a lot of pay and bonuses saved up. He'd come home—incredibly, he would be home again!—and they'd settle down on the ranch and raise pure-bred horses, and at night he would look up to the wheeling constellations and smoke his pipe and trade a friendly wink with Arcturus.

His son would not own merely sterile Luna, frigid Mars, poisonous galling hell-hole of Venus. He would have the splendor and mystery of a whole galaxy for range, his metal horses would pasture between the stars.

Langley riffled through the log-book. It was only half a journal, the rest was page after page of data: engine performance, stellar locations, planetary orbital elements, planetary mass and temperature and atmospheric composition, a universe grasped in a few scribbled figures.

Somehow, the dryness of it cheered him, brought the chill dark down to a thing he could handle.

Langley stuffed his pipe with the few remaining shreds in his tobacco pouch. There was a trick to lighting it and keeping it going in null-gravity. Thank heaven this ship had been equipped with everything available and a lot unknown before she was built; most boats, you couldn't smoke at all, oxygen was too costly. But it had been understood that the *Explorer* would be heading for strange shores. Small though she was, she had the engines and reaction-mass tanks of a cruiser, she could land directly on any planet the size of Earth or less, could maneuver after a fashion in atmosphere, could support her crew for years, could run tests on every imaginable factor of environment. Designing her alone had been a six-year, ten-million-dollar job.

He reflected on the history of space travel. It was not very old. Most engineers had doubted that it would ever become very important. The space stations were useful, the Luna bases had military value, but aside from that the Solar System was a hostile barrenness whose only interest seemed to be scientific knowledge and, possibly, fissionable elements. Then the physics journals had carried an announcement from Paris.

LeFevre was only investigating electron-wave diffraction patterns to test certain aspects of the new unified-field theory. But he had been using a highly original hookup in-

cluding a gyromagnetic element, and his results—blurred dark rings and splotches on a photographic plate, nothing spectacular at all—were totally unexpected. The only interpretation he could make was that the electron beam had gone from one point to another, instantaneously, without troubling to cross the intervening space.

At California they used the big accelerators to power a massive beam, almost a gram of matter, and confirmed the data. In Kerenskygrad, the theoretician Ivanov had gotten excited and come out with an explanation that fitted the observed facts: the continuum was not four-dimensional, there were no less than eight possible directions at right angles to each other—a modification of the old wave-mechanical hypothesis of one other universe co-existing with ours. The matter had gone through this "hyperspace"; as far as our universe was concerned, it had gone from point to point instantaneously.

Instantaneously! It meant that the stars and their uncounted planets were a wink away!

Ten years of development, and a shell loaded with instruments leaped from a space station near Earth almost to the orbit of Pluto. When it was found by its radiosonde, the instruments said that no time had been required for the passage, and the animals aboard were unharmed. There was only one trouble—it had emerged a good many millions of miles from the point where it was supposed to. Repeated experiments

gave a huge percentage of error in the positioning controls, one which would add up hopelessly and dangerously in crossing light-years.

Ivanov and the engineers agreed that this was merely due to the Heisenberg uncertainty principle, whose effects were grossly magnified by the particular circuits used. It was simply an engineering problem to refine the circuits until a spaceship could be brought out almost exactly where she was wanted.

But such work required plenty of room, lest the error pile up the ship on a planet—or even more disastrously, inside one—and so that the instrument readings would be large enough to permit meaningful assays of the result of making changes in the circuits. The obvious answer was to send a laboratory ship out with a crew of experts, who would make improvements, test them with a long jump, and make still further alterations. The answer was known as the United States Interplanetary Ship *Explorer*.

Langley went through the record of the past year, the erratic leaps from star to star, cursing and sweating in a tangle of wires and tubes, blue flame over soldering irons, meters, slide rules, a slow battle slogging toward victory. One cut-and-try system after another, each a little better, and finally the leap from Holat back toward Earth. It had been the philosophers of Holat whose non-human minds, looking at the problem from an oddly different angle, had suggested the final, vital

improvements; and now the *Explorer* was coming home to give mankind a universe.

Langley's thoughts wandered again over worlds he had seen, wonder and beauty, grimness and death, always a high pulse of achieving. Then he turned to the last page and unclipped a pen and wrote:

"19 July 2048, hours 1630. Emerged an estimated 0.3 light-year from Sol, error presumably due to some unforeseen complication in the engines. Attempts to correct same now being made. Position—" He swore at his forgetfulness and went back to the pilot room to take readings on the stars.

Blaustein's long thin form jack-knifed through the air as he finished; the gaunt sharp face was smeared with oil, and the hair more unkempt even than usual. "Can't find a thing," he reported. "We tested with everything from Wheatstone bridges to computer problems, opened the gyromagnetic cell, nothing looks wrong. Want we should tear down the whole beast?"

Langley considered. "No," he said at last. "Let's try it once more first."

Matsumoto's compact, stocky frame entered; he grinned around his eternal chewing gum and let out some competent profanity. "Could be she just got the collywobbles," he said. "The more complicated a hook-up gets, the more it acts like it had a mind of its own."

"Yeah," said Langley. "A brilliant mind devoted entirely to frus-

trating its builders." He had his co-ordinates now; the ephemeris gave him the position of Earth, and he set up the superdrive controls to bring him there just outside the remaining margin of error. "Strap in and hang on to your hats, gents."

There was no sensation as he pulled the main switch. How could there be, with no time involved? But suddenly the spark of Sol was a dull-purple disk as the screen polarized against its glare.

"Whoops!" said Matsumoto. "Honolulu, here I come!"

There was a coldness along Langley's spine. "No," he said.

"Huh?"

"Look at the solar disk. It's not big enough. We should be just about one A.U. from it; actually we're something like one and a third."

"Well, I'll be—" said Matsumoto.

Blaustein's lips twitched nervously. "That's not too bad," he said. "We could get back on rockets from here."

"It's not good enough," said Langley. "We had . . . we thought we had the control down to a point where the error of arrival was less than one per cent. We tested that inside the system of Holat's sun. Why can't we do as well in our own system?"

"I wonder—" Matsumoto's cocky face turned thoughtful. "Are we approaching asymptotically?"

The idea of creeping through eternity, always getting nearer to Earth and never quite reaching it,

was chilling. Langley thrust it off and took up his instruments, trying to locate himself.

They were in the ecliptic plane, and a telescopic sweep along the zodiac quickly identified Jupiter. Then the tables said Mars should be over there and Venus that way—Neither of them were.

After a while, Langley racked his things and looked around with a strained expression. "The planetary positions aren't right," he said. "I think I've spotted Mars . . . but it's green."

"Are you drunk?" asked Blaustein.

"No such luck," said Langley. "See for yourself in the 'scope; that's a planetary disk, and from our distance from the sun and its direction, it can only be in Mars' orbit. But it's not red, it's green."

They sat very still.

"Any ideas, Saris?" asked Blaustein in a small voice.

"I iss rather not say." The deep voice was carefully expressionless, but the eyes had a glaze which meant thought.

"To hell with it!" Recklessly, Langley sent the ship quartering across her orbit. The sun-disk jumped in the screens.

"Earth!" whispered Blaustein. "I'd know her anywhere."

The planet hung blue and shining against night, her moon like a drop of cool gold. Tears stung Langley's eyes.

He bent over his instruments again, getting positions. They were

still about half an Astronomical Unit from their goal. It was tempting to forget the engines and blast home on rockets—but that would take a long while, and Peggy was waiting. He set the controls for emergence at five thousand miles distance.

Jump!

"We're a lot closer," said Matsumoto, "but we haven't made it yet."

For a moment rage at the machine seethed in Langley. He bit it back and took up his instruments. Distance about forty-five thousand miles this time. Another calculation, this one quite finicking to allow for the planet's orbital motion. As the clock reached the moment he had selected, he threw the switch.

"We did it!"

There she hung, a gigantic shield, belted with clouds, blazoned with continents, a single radiant star where the curving oceans focused sunlight. Langley's fingers shook as he got a radar reading. The error this time was negligible.

Rockets spumed fire, pressing them back into their seats, as he drove the vessel forward. Peggy, Peggy, Peggy, it was a song within him.

Was it a boy or a girl? He remembered as if it were an hour ago, how they had tried to find a name, they weren't going to be caught flat-footed when the man brought the birth certificate around. O Peggy! I miss you so much.

They entered the atmosphere, too eager to care about saving fuel with a braking ellipse, backing down on

a jet of flame. The ship roared and thundered around them.

Presently they were gliding, on a long spiral which would take them halfway round the world before they landed. There was a dark whistle of cloven air outside.

Langley was too busy piloting to watch the view, but Blaustein, Matsumoto, and even Saris Hronna strained their eyes at the screens. It was the Holatan who spoke first: "Iss that the much by you talked of city New York?"

"No . . . we're over the Near East, I think." Blaustein looked down to the night-wrapped surface and a twinkling cluster of light. "Which is it, anyway?"

"Never saw any city in this area big enough to show this high up without a telescope," said Matsumoto. "Ankara? There must be unusually clear seeing tonight."

The minutes ticked by. "That's the Alps," said Blaustein. "See the moonlight on them? Bob, I know damn well there's no town that size *there*!"

"Must be near as big as Chicago—" Matsumoto paused. When he spoke again, it was in a queer, strained tone: "Jim, did you get a close look at Earth as we came in?"

"More or less. Why?"

"*Hub*? Why . . . why—"

"Think back. Did you? We were too excited to notice details, but—I saw North America clear as I see you, and—I should have seen the arctic ice cap, I've seen it a million times from space, only there were

just a few dark splotches there— islands, no snow at all—”

Silence. Then Blaustein said thickly: “Try the radio.”

They crossed Europe and nosed over the Atlantic, still slowing a velocity that made the cabin baking hot. Here and there, over the waste of waters, rose more jewels of light, floating cities where none had ever been.

Matsumoto turned the radio dials slowly. Words jumped at him, a gabble which made no sense at all. “What the devil?” he mumbled. “What language is that?”

“Not European, I can tell you,” said Blaustein. “Not even Russian, I know enough of that to identify—Oriental?”

“Not Chinese or Japanese. I’ll try another band.”

The ship slanted over North America with the sunrise. They saw how the coastline had shrunk. Now and then Langley manipulated gyroscopes and rockets for control. He felt a cold bitterness in his mouth.

The unknown speech crackled on all frequencies. Down below, the land was green, huge rolling tracts of field and forest. Where were the cities and villages and farms, where were the roads, where was the world?

Without landmarks, Langley tried to find the New Mexico spacefield which was his home base. He was still high enough to get a wide general view through drifting clouds, he saw the Mississippi and then, far

off, thought he recognized the Platte, and oriented himself mechanically.

A city slid below, it was too remote to see in detail but it was not like any city he had ever known. The New Mexico desert was turned green, seamed with irrigation canals.

“What’s happened?” Blaustein said it like a man hit in the stomach. “What’s happened?”

Something entered the field of view, a long black cigar shape, matching their speed with impossible ease. There was no sign of jets or rockets or propellers or—anything. It swooped close, thrice the length of the *Explorer*, and Langley saw flat gun turrets on it.

He thought briefly and wildly of invasions from space, monsters from the stars overrunning and remaking Earth in a single year of horror. Then a brief blue-white explosion that hurt his eyes snapped in front of the ship, and he felt a shiver of concussion.

“They shot across the bows,” he said in a dead voice. “We’d better land.”

Down below was a sprawling complex of buildings and open spaces, it seemed to be of concrete. Black fliers swarmed over it, and there were high walls around. Langley tilted the *Explorer* and fought her down to the surface.

When he cut the rockets, there was a ringing silence. Then he unbuckled himself and stood up.

He was a tall man, and as he stood there he gave an impression of gray-



ness, a gray uniform, gray eyes, black hair prematurely streaked with gray, a long hooknosed face burned dark by the light of strange suns. And when he spoke, there was grayness in his tone.

"Come on. We'll have to go out and see what they want."

II

Lord Brannoch dhu Crombar, Tertiary Admiral of the Fleet, High Noble of Thor, ambassador of the League of Alpha Centauri to the Solar Technate, did not look like a dignitary of any civilized power. He was gigantic, six and a half feet tall, so wide in the shoulders that he seemed almost squat; the yellow mane of a Thorian chieftain fell past ears in which jeweled rings glittered to the massive collarbone, the eyes were blue and merry under a tangled forest of brow, the face was blunt and heavy and sun-browned, seamed with old scars. His lounging pajamas were of Centaurian cut, complete with trousers, and overly colorful; a diamond loop circled his throat. He was also known as a sportsman, hunter, duellist, a mighty lover and a roisterer with an unsurpassed knowledge of the dives on a dozen planets. The apartment which his enormous body seemed to fill was overcrowded with color, ornament, trophies, hardly a book-spool in sight.

All of which fitted in well enough with his character, but was likewise maintained as camouflage for one of

the shrewdest brains in the known universe.

It might have been observed that the drink in his hand as he relaxed on the balcony was not his home planet's rotgut but one of the better Venusian vintages, and that he sipped it with real appreciation. But there was no one to notice except four monsters in a tank, and they didn't care.

Morning sunlight flooded over him, gilding the airy spires and flexible bridgeways of Lora against a serene heaven. He was, as befitted his rank, high in the upper levels of the city, and its voice drifted to him in a whisper, the remote song of machines that were its heart and brain and nerve and muscle. At only one point in his visual range did the smooth harmony of metal and tinted plastic end, where the city dropped clifflike four thousand feet to the surrounding parks. The few human figures abroad on the flanges and bridgeways were ants, almost invisible at this distance. A service robot rolled past them, bound for some job too complex for a merely human slave.

Brannoch felt relaxed and peaceful. Things were going well. His sources of information were operating quietly and efficiently, already he knew much about Sol which would be of value when the war started; he had bagged a dragon in Minister Tanarac's African preserve, he had won grandly the last time he visited Luna Casino, he had bought a very satisfactory girl a few days

ago, the last mail ship from Centauri had reported his estates on Freyja were yielding a bumper crop—of course, the news was more than four years old, but still welcome. Life could be worse.

The apologetic buzz of the telephone interrupted his reflections. Too lazy to get up, he steered the chair over to it. Someone who knew his special and highly unofficial number was calling, but that could be a lot of people. He thumbed the switch, and an unfamiliar face looked at him. The caller bowed ritually, covering his eyes, and said humbly: "Audience requested with you, my lord."

"Now?" asked Brannoch.

"P-p-presently, my lord, when c-convenient." The stutter would be taken for the normal nervousness of an underling in such an august presence, in case this secret line was tapped—which Brannoch knew very well it was. Actually, the pattern of repeated consonants was an identifying password. This was Varis t'u Hayem, a petty Minister and a captain in the Solar militechint intelligence corps, dressed in civilian clothes and wearing a life-mask. He would not be reporting in person unless it was a matter of urgency. Brannoch led him through a routine of giving his assumed name and business, told him to come up, and cut the circuit. Only then did he allow himself a frown.

Rising, he made a careful check of the concealed roboguns and of the needler under his own tunic. It

could be an attempt at assassination, if Chanthavar's counterspies had learned enough. Or it could—

He went swiftly over t'u Hayem's background, and a wry, half-pitying grin twisted his mouth. It was so easy, so terribly easy to break a man.

You met this proud, ambitious aristocrat, whose only real fault was youth and inexperience, at a couple of receptions, drew him out—oh, simple, simple, with the dazzling glow of your own birth and rank behind you. Your agents in his corps got his psychorecord for you, and you decided he was promising material. So you cultivated him, not much, but even a little attention from the agent of a foreign power was overwhelming if you were a High Noble, an admiral, and an ambassador. You pulled one or two wires for him. You introduced him to really top-flight company, gorgeous appareled nobles of every known state, their magnificent women, their cultivated conversation and splendid homes and rare wines. You gave him the idea that he was listening at the door to plans which would shake the stars—Naturally he did some favors for you, nothing to violate his oath, just stretching a point here and there.

You took him to pleasure houses operated with real imagination. You got him gambling, and at first he won incredible sums. Then you moved in for the kill.

In a few days his fortune was gone, he was sunk a light-year down in debt, his superiors were getting

suspicious of him because of his association with you, his creditors (who were your creatures, which he did not know) attached his property and wife—you had him. And for some three years, now, he had been your spy within his own corps, because only you and your organization propped him up, and because even a tiny illegality performed for you made it possible to blackmail him. Some day, if he gave you something really valuable, you might even buy his wife (with whom he was so foolish as to be in love) and give her back to him.

Very easy. Brannoch had neither pleasure nor pain in making a tool out of what had been a man. It was part of his job; in so far as he had any feeling about his broken men, it was one of contempt that they should ever have been so vulnerable.

The outer door of the suite scanned t'u Hayem's fingers and retinæ and opened for him. He entered and bowed with the proper formulas. Brannoch did not invite him to sit down. "Well?" he said.

"Most radiant lord, I have information which may be of interest to you. I thought I had best bring it personally."

Brannoch waited. The pseudo-face before him twitched with an eagerness that some might have thought pathetic.

"My lord, I am as you know stationed at Mesko Field. The day before yesterday, a strange spaceship entered Earth's atmosphere and was

made to land there." T'u Hayem fumbled in his tunic and brought out a spool which he threaded into a scanner. His hands shook. "Here is a picture of it."

The scanner threw a three-dimensional image above the table top. Brannoch whistled. "Stormblaze! What kind of a ship is that?"

"Incredibly archaic, my lord. See, they even use rockets—a uranium-fission pile for energy, reaction mass expelled as ions—"

Brannoch enlarged the image and studied it. "Hm-m-m, yes. Where is it from?"

"I don't know, my lord. We referred the question to the Technon itself—records division—and were told that the design is of the very earliest days of space travel, well before gravity control was discovered. Possibly from one of the oldest of the lost colonies."

"Hm-m-m. Then the crew must be—have been—outlaws. I can't see explorers taking off knowing they wouldn't be back for perhaps thousands of years. What about the crew?" Brannoch turned a knob, and the next image was of three humans in outlandish gray uniform, clean-shaven, hair cut short in the style of Solar Ministers. "That all?"

"No, my lord. If that were all, I wouldn't have considered the business so important. But there was a nonhuman with them, a race unknown to anyone including the records division. We got a picture, snapped hastily—"

The alien was shown running. Big

beast—eight feet long including the thick tail, bipedal with a forward-crouching gait, two muscular arms ending in four-fingered hands. It could be seen to be male and presumably a mammal, at least it was covered with smooth mahogany fur. The head was lutrine: round, blunt-snouted, ears placed high, whiskers about the mouth and above the long yellow eyes.

"My lord," said t'u Hayem in a near whisper, "they emerged and were put under arrest pending investigation. Suddenly the alien made a break for it. He's stronger than a human, trampled down three men in his path, moved faster than you would think. Anaesthetic guns opened up on him—rather, they should have, but they didn't. They didn't go off! I snapped a shot at him with my hand blaster, and the circuit was dead—nothing happened. Several others did too. A small robot shell was fired after him, and crashed. A piloted scoutplane swooped low, but its guns didn't go off, the control circuits went dead, and it crashed too. The nearest gate was closed, but it opened for him as he approached it. One man close by focused a neutral tracker on him as he went into the woods, but it didn't work till he was out of its range."

"Since then, we have been striving to hunt him down, there are patrols all over the district, but no trace has been found. My lord, it doesn't seem possible!"

Brannoch's face might have been carved in dark wood. "So," he mur-

mured. His eyes rested on the image of captured motion. "Quite naked, too. No weapon, no artifact. Are there any estimates of the range of his . . . power?"

"Roughly five hundred yards, my lord. That was approximately the distance within which our apparatus failed. He moved too fast for longer-range weapons to be brought against him in those few seconds."

"How about the humans?"

"They seemed as shocked as we, my lord. They were unarmed and made no attempt to resist us. Their language was unknown. At present they are under psychostudy, which I imagine will include a course in Solar, and I've no access to them. But the records division tells us, from the documents aboard, that the language is—" T'u Hayem searched his memory. "Old American. The documents are being translated, but I haven't been told of any findings made."

Old American! thought Brannoch. *How old is that ship, anyway?* Aloud: "What other material do you have?"

"Stats of all the documents, pictures, and whatever else was found aboard, my lord. It . . . it wasn't easy to get them."

Brannoch grunted indifferently. "Is that all?"

T'u Hayem's mouth fell open. "All, my lord? What else could I do?"

"Much," said Brannoch curtly. "Among other things, I want a complete report on the findings of the

interrogators, preferably a direct transcript. Also the exact disposition made of this case, daily bulletins of progress on the alien hunt . . . yes, much."

"My lord, I haven't the authority to—"

Brannoch gave him a name and address. "Go to this fellow and explain the problem—at once. He'll tell you whom to get in touch with at the field and how to apply the right pressures."

"My lord"—T'u Hayem wrung his hands— "I thought perhaps, my lord . . . you know m-my wife—"

"I'll pay you the flat rate for this stuff, applied against your debts," said Brannoch. "If it turns out to be of some value, I'll consider a bonus. You may go."

Silently, t'u Hayem bowed and backed out.

Brannoch sat motionless for a while after he was gone, and then ran through the series of stat-pictures. Good clear ones, page after page of writing in a language whose very strange to him. *Have to get this translated*, he thought, and the file cabinet in his brain gave the name of a scholar who would do it and keep a closed mouth.

He lounged a bit longer, then rose and went to the north wall of the room. It showed a moving stereo-pattern, very conventional; but behind it was a tank of hydrogen, methane, and ammonia at a thousand atmospheres pressure and minus one hundred degrees temperature, and

there was visual and aural apparatus.

"Hello, you Thrymkas," he said genially. "Were you watching?"

"I was," said the mechanical voice. Whether it was Thrymkas-1, -2, -3, or -4 which spoke, Brannoch didn't know, nor did it matter. "We are all in linkage now."

"What do you think?"

"Apparently this alien has telekinetic powers," said the monsters unemotionally. "We assume these to be simply over electronic flows, because it is noted that everything he controlled or disabled involved electronic tubes. Only a small amount of telekinetic energy would be needed to direct the currents in vacuum as he wished and thus to take over the whole device.

"With high probability, this means that he is telepathic to some degree: sensitive to electrical and other neural pulses and capable of inducing such currents in the nervous systems of others. However, he could hardly have read the minds of his guards. Thus his action was probably just to remain free until he could evaluate his situation; but what he will then do is unpredictable until more is known of his psychology."

"Yeah. That's what I thought, too," said Brannoch. "How about the ship—any ideas?"

"Verification must await translation of those documents, but it seems probable that the ship is not from some lost colony but from Earth herself—the remote past. In the course of wanderings, it chanced on the

planet of this alien and took him along. The distance of said planet depends on the age of the ship, but since that seems to date from about five thousand years ago, the planet cannot be more than twenty-five hundred light-years removed."

"Far enough," said Brannoch. "The known universe only reaches a couple of hundred."

He took a turn about the room, hands clasped behind his back. "I doubt that the humans matter," he said. "Especially if they really did come from Earth; then they're only of historical interest. But this alien, now—that electron-control effect is a new phenomenon. Just imagine what a weapon!" His eyes blazed. "Put the enemy guns out of action, even turn them on their owners—disable the Technon itself—Father!"

"The same thought has doubtless occurred to the Solar authorities," said the Thrymans.

"Uh-huh. Which is why they're pressing the hunt so hard. If they don't catch him, these human friends of his may know how to do it. Even if they do make the capture, he's still likely to be influenced by his crewmates. Which makes the fellow of more importance than I'd realized—" Brannoch prowled the floor, turning the fact over in his mind.

All at once, he felt very alone. He had his aides here, his bodyguard, his agents, his spy ring, but they were few among the hostile billions of Sol. It would take almost four and a half years to get a message

home . . . as long for the fleet to come here—

Sharp within him rose the image of his home. The steep, windy mountains of Thor, whistling stormy skies, heath and forest and broad fair plains, gray seas rolling under the tidal drag of three moons, the dear hard pull of the planet's mass; the hall of his ancestors, stone and timber rearing heavily to smoky rafters and ancient battle flags; his horses and hounds and the long halloo of hunting; the proud quarrelsome nobles, the solid, slow-spoken yeomen; great hush of winter snow-fall and the first green flames of spring—the love and longing for his planet was an ache within his breast.

But he was a ruler, and the road of kings is hard. Also, and here he grinned, it would be fun to sack Earth, come the day.

His mission had suddenly narrowed. He had to get this alien for Centauri, so the scientists back home could study the power and duplicate it in a military unit. Failing that, he had to prevent Sol from doing the same—by killing the creature if necessary. He dismissed the idea of joining the chase with his own agents: too much of a giveaway, too small a chance of success. No, it would be better to work through those human prisoners.

But what hold could he get on men whose world was five thousand years in its grave?

Returning to the scanner, he went back through its spool. Some of the

frames showed pictures and other objects which must be of a personal nature. There was one photograph of a woman which was quite excellent.

An idea occurred to him. He walked back onto the balcony, picked up his wineglass, and toasted the morning with a small laugh. Yes, it was a fine day.

III

Langley sat up with a gasp and looked around him. He was alone.

For a moment, then, he sat very still, allowing memory and thought to enter him in a trickle. The whole pattern was too shatteringly big to be grasped at once.

Earth, altered almost beyond recognition: no more polar caps, the seas encroaching miles on every shore, unknown cities, unknown language, unknown men—there was only one answer, but he thrust it from him in a near panic.

There had been the landing, Saris Hronna's stunningly swift escape (why?), and then he and his companions had been separated. There were men in blue who spoke to him in a room full of enigmatic machines that whirred and clicked and blinked. One of those had been switched on, and darkness had followed. Beyond that, there was only a dreamlike confusion of half-recalled voices. And now he was awake again, and naked, and alone.

Slowly, he looked at the cell. It was small, bare save for the couch

and washstand which seemed to grow out of the green-tinted, soft and rubbery floor. There was a little ventilator grille in the wall, but no door that he could see.

He felt himself shaking, and fought for control. He wanted to weep, but there was a dry hollowness in him.

Peggy, he thought. *They could at least have left me your picture. It's all I'll ever have, now.*

A crack appeared in the farther wall, dilated until it was a doorway, and three men stepped through. The jerk which brought Langley erect told him how strained his nerves were.

He crouched back, trying to grasp the details of appearance on these strangers. It was hard, somehow. They were of another civilization, clothes and bodies and the very expressions were something new, a total gestalt was lacking for him.

Two of them were giants, nearly seven feet tall, their muscled bodies clad in a tight-fitting black uniform, their heads shaven. It took a little while to realize that the wide brown faces were identical. Twins?

The third was a little below average height, lithe and graceful. He wore a white tunic, deep-blue cloak, soft buskins on his feet, and little else; but the insigne on his breast, a sunburst with an eye, was the same as that of the two huge men behind him. He shared their smooth tawny skin, high cheekbones, faintly slanted eyes; but straight black hair was sleeked over the round head, and

the face was handsome—broad low forehead, brilliant dark eyes, snub nose, strong chin, a wide full mouth, overall a nervous mobility.

All three bore holstered sidearms.

Langley had a sense of helplessness and degradation in standing nude before them. He tried for a poker face and an easy stance, but doubted that it was coming off. There was a thick lump as of unshed tears in his throat.

The leader inclined his head slightly. "Captain Edward Langley," he said, pronouncing it with a heavy accent. His voice was low, resonant, a superbly controlled instrument.

"Yes."

"I take it that means *nya*." The stranger was speaking the foreign tongue, and Langley understood it as if it had been his own. It was a clipped, rather high-pitched language, inflectional but with a simple and logical grammar. Among so much else, Langley felt only a vague surprise at his own knowledge, a certain relief at not having to study. "Permit me to introduce myself. I am Minister Chanthavar Tang vo Lurin, chief field operative of the Solar militechnic intelligence corps and, I hope, your friend."

Langley's brain felt thick, but he tried to analyze what had been said, calling on his new linguistic training. There were three forms of address, toward superiors, inferiors, and equals; Chanthavar was using the last, a courteous noncommittal gesture. His family name would be

"vo Lurin," the prefix a sign of aristocratic birth as *von* and *de* had once been in Langley's world; however, only the lower ranks of the nobility were addressed by their surnames, the upper crust went by the given ones like ancient kings.

"Thank you, sir," he answered stiffly.

"You must pardon such impoliteness as we may have shown you," said Chanthavar with an oddly winning smile. "Your comrades are safe, and you will soon rejoin them. However, as a spaceman you realize that we could not take chances with a complete stranger."

He gestured to one of the guards, who laid a suit of clothes on the couch: similar to Chanthavar's, though lacking the military symbol and the jeweled star which he bore. "If you will put these on, captain; it is the standard dress of the freeborn, and I'm afraid you'd feel too conspicuous in your own."

Langley obeyed. The material was soft and comfortable. Chanthavar showed him how to close the fastenings, which seemed to be a kind of modified zipper. Then he sat down companionably on the bed, waving Langley to join him. The guards remained rigid by the door.

"Do you know what has happened to you?" he asked.

"I . . . think so," said Langley dully.

"I'm sorry to tell you this." Chanthavar's voice was gentle. "Your log has been translated, so I know you didn't realize how the super-

drive actually operates. Curious that you shouldn't, if you could build one."

"There was an adequate theory," said Langley. "According to it, the ship warped through hyperspace."

"There's no such animal. (Chanthavar's expression was literally: 'That engine is drained.') Your theory was wrong, as must have been discovered very soon. Actually, a ship is projected as a wave pattern, re-forming at the point of destination; it's a matter of setting up harmonics in the electronic wave trains such that they reconstitute the original relationship at another point of space-time. Or so the specialists tell me, I don't pretend to understand the mathematics. Anyhow, there's no time of passage for those aboard, but according to an external observer, the trip is still made only at the speed of light. No better system has ever been found, and I doubt that it ever will. The nearest star, Alpha Centauri, is still nearly four and a half years away."

"We'd have known that," said Langley bitterly, "except for the trouble with the space positioning. Because of that, it took us so long to find our test rockets that we had no way of observing that a finite time of passage had gone by. On my own voyage, the time lag was lost in the uncertainty of exact stellar positions. No wonder we had such trouble approaching Earth as we come home—it was moving in its own orbit, so was the sun, and we didn't know that—Home!" he

exploded, with a stinging in his eyes. "We crossed a total of some five thousand light-years. So it must be that many years later we came back."

Chanthavar nodded.

"I don't suppose—" Langley had little hope, but: "I don't suppose you have a way to send us back—into the past?"

"I'm sorry, no," said Chanthavar. "Time travel isn't even a theoretical possibility. We've done things which I believe were unknown in your time: gravity control, genetic engineering, making Mars and Venus and the Jovian moons habitable, oh, a great deal no doubt; but that is one art nobody will ever master."

You can't go home again.

Langley asked wearily: "What's happened in all that time?"

Chanthavar shrugged. "The usual. Overpopulation, vanishing natural resources, war, famine, pestilence, depopulation, collapse, and then the resumption of the cycle. I don't think you'll find people very different today."

"Couldn't you have taught me—?"

"Like the language? Not very well. That was a routine hypnotic process, quite automatic and not involving the higher centers of the brain. You were interrogated in that state too, but as for your more complex learning, it's best done gradually."

There was a deadness in Langley, a stricken indifference, and he twist-



ed away from it by trying to focus his mind on detail. Anything, just so it was impersonal enough. "What kind of world is it now? And what can I do in it?"

Chanthavar leaned forward, elbows on knees, cocking a sideways eye at the other. Langley forced himself to pay attention. "Let's see. Interstellar emigration began about your time—not too extensive at first, because of the limitations of the superdrive and the relative scarcity of habitable planets. During later periods of trouble, there were successive waves of such outward movement, but most of these were malcontents and refugees who went far from Sol lest they be found later, and have been lost track of. We presume there are many of these lost colonies, scattered throughout the galaxy, and that some of them must have evolved into very different civilizations; but the universe we actually know something about and have even an indirect contact with, only reaches a couple of hundred light-years. Who would have any reason to explore farther?"

"The . . . let's see, I think it was the twenty-eighth world war which reduced the Solar System almost to barbarism and wiped out the colonies on the nearer stars. Reconstruction took a long time, but about two thousand years ago the Solar System was unified under the Technate, and this has endured so far. Colonization was resumed, with the idea of keeping the colonists fairly close to home and thus under control, while the

emigration would be a safety valve for getting rid of those who didn't adjust well to the new arrangements.

"Of course, it didn't work. Distances are still too great; different environments inevitably produce different civilizations, other ways of living and thinking. About a thousand years ago, the colonies broke loose, and after a war we had to recognize their independence. There are about a dozen such states now with which we have fairly close contact—the League of Alpha Centauri is much the most powerful of them.

"If you want to know more about outer-space conditions, you can talk to a member of the Commercial Society. At present, though, I wouldn't bother, not till you're better up on modern Earth."

"Yes, how about that?" said Langley. "What is this Technate system, anyway?"

"The Technon is merely a giant sociomathematical computer which is fed all available data continuously, by all agencies, and makes basic policy decisions in view of them. A machine is less fallible, less selfish, less bribeable, than a man." Chanthavar grinned. "Also, it saves men the trouble of thinking for themselves."

"I get the impression of an aristocracy—"

"Oh, well, if you want to call it that. Somebody has to take responsibility for executing the Technon's policies and making the small daily decisions. The class of Ministers exists for that purpose. Under them

are the Commoners. It's hereditary, but not so rigid that occasional recruits from the Commons don't get elevated to the Ministry."

"Where I come from," said Langley slowly, "we'd learned better than to leave leadership to chance—and heredity is mighty chancy."

"Not enough to matter nowadays. I told you we had genetic engineering." Chanthavar laid a hand on his, squeezing slightly: it was not a feminine gesture, Langley realized, only a custom different from his. "Look here, captain, I don't give a damn what you say, but some people get rather stuffy about it. Just a hint."

"What can we . . . my friends and I . . . do?" Langley felt a dim annoyance at the strain in his voice.

"Your status is a bit unusual, isn't it? I'm appointing myself your patron, and you'll have a sort of quasi-Ministerial rank with funds of your own for the time being. Not charity, by the way; the Technate does have a special cash-box for unforeseen details, and you are hereby classified as an unforeseen detail. Eventually we'll work out something, but don't worry about getting sent to the commons. If nothing else, your knowledge of the past is going to make you the pet of the historians for the rest of your lives."

Langley nodded. It didn't seem to matter much, one way or another. Peggy was dead.

Peggy was dead. For five thousand years she had been dust, darkness in her eyes and mold in her mouth, for

five thousand years she had not been so much as a memory. He had held back the realization, desperately focusing himself on the unimportant details of survival, but it was entering him now like a knife.

He would never see her again.

And the child was dust, and his friends were dust, and his nation was dust; a world of living and laughter, proud buildings, song and tears and dreams, had sunk to a few ashen pages in some forgotten archive. And this was how it felt to be a ghost.

He bowed his head and wanted to weep, but there were eyes on him.

"It's no fun," said Chanthavar sympathetically. After a moment: "Take my advice and concentrate on immediate things for a while. That ought to help."

"Yes," said Langley, not looking at him.

"You'll strike roots here, too."

"I wonder."

"Well, you're better off if you don't, anyway." An odd, bitter note there. "Enjoy yourself. I'll show you some interesting dives."

Langley stared at the floor.

"There's one thing you can help me with right now," said Chanthavar. "It's the reason I came here to see you, instead of having you sent to my office. More privacy."

Langley touched his lips, remembering how Peggy's had brushed them and then clung to them, fifty centuries ago.

"It's about that alien you had

along—Saris Hronna, was that the name you recorded for him?"

"More or less. What about him?"

"He escaped, you know. We haven't found him yet. Is he dangerous?"

"I don't think so, unless he gets too annoyed. His people do have a keen hunting instinct, but they're peaceable otherwise, treated us with great friendliness. Saris came along to see Earth, and as a kind of ambassador. I think he only broke away till he could get some idea of the situation. He must have dreaded the possibility of being caged."

"He can control electronic and magnetronic currents. You know that?"

"Of course. It surprised us, too, at first. His race isn't telepathic in the usual sense, but they're sensitive to neural currents—especially emotions—and can project the same. I . . . I really don't know whether he can read a human mind or not."

"We have to find him," said Chanthavar. "Have you any idea where he might go, what he might do?"

"I'd . . . have to think about it. But I'm sure he isn't dangerous." Langley wondered, inside himself. He knew so little about the Holatan mind. It wasn't human. How would Saris Hronna react when he learned?

"You note their planet as being some thousand light-years from Sol. It's unknown to us, of course. We don't intend this being any harm, but we have to locate him."

Langley glanced up. Under the

mobile, smiling mask of his face, Chanthavar seemed almost feverish. There was a hunter's gleam in his eyes. "What's the hurry?" asked the spaceman.

"Several things. Chiefly, the possibility that he may carry some germ to which man has no immunity. We've had plagues like that before."

"We were on Holat a couple of months. I've never been healthier in my life."

"Nevertheless, it has to be checked. Furthermore, how's he going to live except by robbery? Can't have that, either. Haven't you *any* idea where he might have gone?"

Langley shook his head. "I'll think hard about it," he said cautiously. "Maybe I'll figure out an answer, but I can't promise anything."

"Well," said Chanthavar wryly, "that'll have to do for now. Come on, let's get some dinner."

He rose, and the two guards fell into step behind. The spaceman paid little attention to the halls and the anti-gravity rise-shafts along which he went. He was wrapped in his own desolation.

O my darling, I never came back. You waited, and you grew old, and you died, and I never came back to you. I . . . I'm sorry, dearest of all, I'm sorry. Forgive me, O dust.

And down underneath, sharp and cold, a thought of wariness and suspicion: Chanthavar seemed pleasant enough. But he was top brass. Why should he take personal charge of

the hunt for Saris? His reasons were thin—somewhere the real one lay hidden.

And what should I do about it?

IV

There was a party in the home of Minister Yulien, high commissioner of metallurgics; the cream of Solar and foreign society would be there, and Chanthavar brought the *Explorer* crew along.

Langley accompanied the agent down tall, columned passages where the air glowed with a soft light and murals traced shifting patterns on the gleaming walls. Behind him sat half a dozen bodyguards, identical giants. Chanthavar had explained that they were his personal slaves and the result of chromosome duplication in an exogenesis tank. There was something not quite human about them.

The spaceman was getting over his feeling of awkwardness, though he still couldn't imagine that he looked like much with hairy skinny legs sticking out from under his tunic. He, Blaustein, and Matsumoto had hardly been out of their palace suite in the day since they were released. They had sat around, saying little, now and then cursing in a whisper full of pain; it was still too new, too devastatingly sudden. They accepted Chanthavar's invitation without great interest. What business did three ghosts have at a party?

The suite was luxurious enough, furniture that molded itself to your contours and came when you called,

a box which washed and brushed and massaged you and finished up by blowing scent on your scrubbed hide, softness and warmth and pastel color everywhere you looked. Langley remembered checked oilcloth on a kitchen table, a can of beer in front of him and the Wyoming night outside and Peggy sitting near.

"Chanthavar," he asked suddenly, "do you still have horses?" There was a word for it in this Earthspeak they had taught him, so maybe—

"Why . . . I don't know." The agent looked a bit surprised. "Never saw one that I remember, outside of historicals. I believe they have some on . . . yes, on Thor for amusement, if not on Earth. Lord Brannoch has often bored his guests by talking about horses and dogs."

Langley sighed.

"If there aren't any in the Solar System, you could have one synthesized," suggested Chanthavar. "They can make pretty good animals to order. Care to hunt a dragon some day?"

"Never mind," said Langley.

"There'll be a lot of important people here tonight," said Chanthavar. "If you can entertain one of them enough, your fortune's made. Stay away from Lady Halin; her husband's jealous and you'd end up as a mind-blanked slave unless I wanted to make an issue of it. You needn't act too impressed by what you see . . . a lot of the younger intellectuals, especially, make rather a game of deriding modern society, and would be happy to have you bear

them out. But avoid saying anything which could be construed as dangerous. Otherwise, just go ahead and have a good time."

They were not walking: they sat on comfortable benches and let the moving floor carry them. Once they went up a gravity shaft, it was a rather eerie experience to ride on nothing. At the end of the trip, which Langley estimated as three miles, they came to a gateway flanked by artificial waterfalls, and got up and went in past armed guards in gilt livery.

The first impression Langley got was of sheer enormousness. The room must be half a mile in diameter, and it was a swirling blaze of flashing color, some thousands of guests perhaps. It seemed roofless, open to a soft night sky full of stars and the moon, but he decided there was an invisible dome on it. Under its dizzy height, the city was a lovely, glowing spectacle.

There was perfume in the air, just a hint of sweetness, and music came from some hidden source. Langley tried to listen, but there were too many voices. Nor did the music make sense, the very scale was different. He murmured *sotto voce* to Blaustein: "Always did think there wasn't much written after Beethoven, and seems like I was right into the indefinite future, world without end."

"Amen," said the physicist. His thin, long-nosed face was bleak.

Chanthavar was introducing them

to their host, who was unbelievably fat and purple but not without a certain strength in the small black eyes. Langley recalled the proper formulas by which a client of one Minister addressed and genuflected to another.

"Man from past, eh?" Yulien cleared his throat. "Int'restin'. Most int'restin'. Have to have long talk with you sometime. Hrumph! How d'y' like it here?"

"It is most impressive, my lord," said Matsumoto, poker-faced.

"Hm-m-m. Ha. Yes. Progress. Change."

"The more things change, my lord," ventured Langley, "the more they remain the same."

"Hmph. Haw! Yes." Yulien turned to greet someone else.

"Well put, fellow. Well put indeed." There was a laugh in the voice. Langley bowed to a thin young man with mottled cheeks. "Here, have a drink." A table went by, and he lifted two crystal goblets off it and handed one over. "I've been wanting to meet you, ever since the word got around. I'm at the university here, doing an historical study. The common element in all the thinkers who've tried to correlate the arts with the general state of society."

Chanthavar raised one eyebrow. His own severely simple dress was conspicuous against the jewels and embroideries which flickered around him. "And have you reached any conclusions, my friend?" he asked.

"Certainly, sir. I've found twenty-

seven books which agree that the virile, unconscious stage of culture produces the corresponding type of art, simple and powerful. Over-ornamentation, such as ours, reflects a decadent state where mind has overcome the world-soul."

"Ah, so. Have you ever seen the work done in the early stages of settlement on Thor, when they were fighting nature and each other all the time and known as the roughest two-fisted tribe in the universe? The basic pattern is the most intricate looping of vines you ever saw. On the other hand, in the last days of the Martian hegemony they went in for a boxlike simplicity. Have you read Sardu's commentaries? Shimarrin's? Or the nine spools of the *Tibnic Study*?"

"Well . . . well, sir, I've got them on my list, but even with the robots to help there's so much to read and—"

Chanthavar, obviously enjoying himself, went on to cite contrary and mutually contradictory examples from the past three thousand years of history. Langley took the chance to fade out of the picture.

A rather good-looking woman with somewhat protuberant eyes grasped his arm and told him how *exciting* it was to *see* a man from the *past* and she was *sure* it had been such an *interesting* epoch back when they were so *virile*. Langley felt relieved when a sharp-faced oldster called her to him and she left in a pout. Clearly, women had a subservient position in the Technate,

though Chanthavar had mentioned something about occasional great female leaders.

He slouched moodily toward a buffet, where he helped himself to some very tasty dishes and more wine. How long would the farce go on, anyway? He'd rather have been off somewhere by himself.

It was summer outside. Always summer on Earth now, the planet had entered an interglacial period with the help of man, more carbon dioxide in the air. With Peggy, this could have been a high and proud adventure; but Peggy was dead and forgotten. He wanted to go outside and walk on the earth to which she had returned, long and long ago.

A flabby person who had had a bit too much to drink threw an arm around his neck and bade him welcome and started asking him about the bedroom techniques of his period. It would have been a considerable relief to— Langley unclenched his fists.

"Want some girls? Min'ster Yulien most hospitable, come right this way, have li'l fun 'fore the Centaurians blow us all to dust."

"That's right," jeered a younger man. "That's why we're going to have the hide beaten off us. People like you. Could they fight in your time, Captain Langley?"

"Tolerable well, when we had to," said the American.

"That's what I thought. Survivor types. You conquered the stars because you weren't afraid to kick the next man. We are. We've gotten soft,

here in the Solar System. Haven't fought a major war in a thousand years, and now that one's shaping up we don't know how."

"Are you in the army?" asked Langley.

"I?" The young fellow looked surprised. "The Solar military forces are slaves. Bred and trained for the job, publicly owned. The higher officers are Ministers, but—"

"Well, would you advocate drafting your own class into service?"

"Wouldn't do any good. They aren't fit. Not in a class with the slave specialists. The Centaurians, though, they call up their free-born, and they *like* fighting. If we could learn that too—"

"Son," asked Langley recklessly, "have you ever seen men with their heads blown open, guts coming out, ribs sticking through the skin? Ever faced a man who intended to kill you?"

"No . . . no, of course not. But—"

Langley shrugged. He'd met this type before, back home. He mumbled an excuse and got away. Blaustein joined him, and they fell into English. "Where's Bob?" asked Langley.

Blaustein gave a crooked grin. "Last I saw, he was heading off-stage with one of the female entertainers. Nice-looking little piece, too. Maybe he's got the right idea."

"For him," said Langley.

"I can't. Not now, anyway." Blaustein looked sick. "You know, I thought maybe, even if everything we knew is gone, the human race

would finally have learned some sense. I was a pacifist, you know—intellectual pacifist, simply because I could see what a bloody, brainless farce it was, how nobody gained anything except a few smart boys—" Blaustein was a little drunk, too. "And the solution is so easy! It stares you right in the face. A universal government with teeth. That's all. No more war. No more men getting shot and resources plundered and little children burned alive. I thought maybe in five thousand years even this dim-witted race of ours would get that lesson hammered home. Remember, they've never had a war at all on Holat. Are we that much stupider?"

"I should think an interstellar war would be kind of hard to fight," said Langley. "Years of travel just to get there."

"Uh-huh. Also, little economic incentive. If a planet can be colonized at all, it's going to be self-sufficient. Those two reasons are why there hasn't been a real war for a thousand years, since the colonies broke loose."

Blaustein leaned closer, weaving a trifle on his feet. "But there's one shaping up now. We may very well see it. Rich mineral resources on the planets of Sirius, and the government there weak, and Sol and Centauri strong. Both of them want those planets. Neither can let the other have them, it'd be too advantageous. I was just talking to an officer, who put it in very nearly those words, besides adding something about the

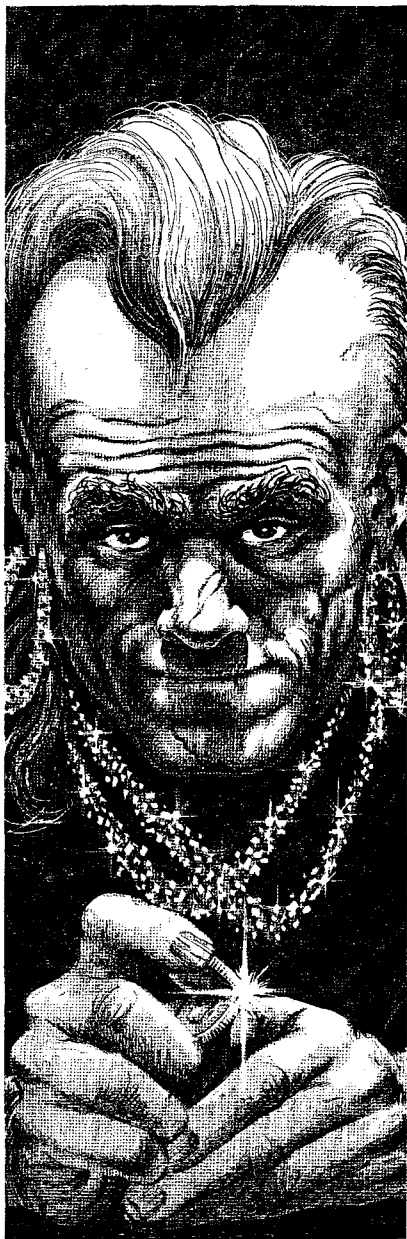
Centaurians being filthy barbarians."

"So I'd still like to know how you fight across four-plus light-years," said Langley.

"You send a king-size fleet, complete with freighters full of supplies. You meet the enemy fleet and whip it in space. Then you bombard the enemy planets from the sky. Did you know they can disintegrate any kind of matter completely now? Nine times ten to the twentieth ergs per gram. And there are things like synthetic virus and radioactive dust. You smash civilization on those planets, land, and do what you please. Simple. The only thing to be sure of is that the enemy fleet doesn't beat you, because then your own home is lying wide open. Sol and Centauri have been intriguing, sparing, for decades now. As soon as one of them gets a clear advantage—wham! Fireworks." Blaustein gulped his wine and reached for more.

"Of course," he said owlishly, "there's always the chance that even if you beat the enemy, enough of his ships will escape to go to your home system and knock out the planetary defenses and bombard. Then you have two systems gone back to the caves. But when has that prospect ever stopped a politician? Or psychotechnical administrator, as I believe they call 'em now. Lemme alone. I want to get blotto."

Chanthavar found Langley a few minutes later and took him by the arm. "Come," he said. "His Fidelity, the chief of the Technon Servants,



wants to meet you. His Fidelity is a very important man . . . Excellent Sulon, may I present Captain Edward Langley?"

He was a tall and thin old man in a plain blue robe and cowl. His lined face was intelligent, but there was something humorless and fanatical about his mouth. "This is interesting," he said harshly. "I understand that you wandered far in space, captain."

"Yes, my lord."

"Your documents have already been presented to the Technon. Every scrap of information, however seemingly remote, is valuable: for only through sure knowledge of all the facts can the machine make sound decisions. You would be surprised how many agents there are whose only job is the constant gathering of data. The state thanks you for your service."

"It is nothing, my lord," said Langley with due deference.

"It may be much," said the priest. "The Technon is the foundation of Solar civilization; without it, we are lost. Its very location is unknown to all save the highest ranks of my order, its servants. For this we are born and raised, for this we renounce all family ties and worldly pleasures. We are so conditioned that if an attempt is made to get our secrets from us, and there is no obvious escape, we die—automatically. I tell you this to give you some idea of what the Technon means."

Langley couldn't think of any response. Sulon was proof that Sol

hadn't lost all vitality, but there was an inhumanness over him.

"I am told that an extraterrestrial being of unknown race was with your crew, and has escaped," went on the old man. "I must take a very grave view of this. He is a completely unpredictable factor—your own journal gives little information."

"I'm sure he's harmless, my lord," said Langley.

"That remains to be seen. The Technon itself orders that he be found or destroyed immediately. Have you, as an acquaintance of his, any idea of how to go about this?"

There it was again. Langley felt cold. The problem of Saris Hronna had all the VIPs—the VGDIPs—scared sweatless; and a frightened man can be a vicious creature.

"Standard search patterns haven't worked," said Chanthavar. "I'll tell you this much, though it's secret: he killed three of my men and got away in their flier. Where has he gone?"

"I'll . . . have to think," stammered Langley. "This is most unfortunate, my lord. Believe me, I'll give it all my attention, but—you can lead a horse to water, but you can't make him drink."

Chanthavar smiled; the cliché, dead and now resurrected, amused him, and Langley thought what a reputation he could get for himself by merely cribbing from Shaw, Wilde, Leacock—Sulon said stiffly: "This horse had better drink," sir, and soon," and dismissed them with a nod. Chanthavar saw an acquaint-

tance and plunged into a hot argument on the proper way to mix some kind of drink called a recycler.

Langley was pulled away by a plump, hairy hand. It belonged to a large pot-bellied man in foreign-looking dress: gray robe and slippers, loops of diamond and rubies. The head was massive, with an elephantine nose, disorderly flame-red hair and the first beard Langley had seen in this age, surprisingly keen light eyes. The rather high voice was accented, an intonation not of Earth: "Greeting, sir. I have been most anxious to meet you. Goltam Valti is the name."

"Your servant, my lord," said Langley.

"No, no. I've no title. Poor old greasy lickspittle Goltam Valti is not to the colors born. I'm of the Commercial Society, and we don't have nobles. Can't afford 'em. Hard enough to make an honest living these days, with buyers and sellers alike grudging you enough profit to eat on, and one's dear old homestead generations away. Well, about a decade in my case, I'm from Ammon in the Tau Ceti system originally. A sweet planet, that, with golden beer and a lovely girl to serve it to you, ah, yes!"

Langley felt a stirring of interest. He'd heard something about the Society, but not enough. Valti led him to a divan and they sat down and whistled at a passing table for refreshments.

"I'm chief factor at Sol," con-

tinued Valti. "You must come see our building sometime. Souvenirs of a hundred planets there, I'm sure it'll interest you. But five thousand years' worth of wandering, that is too much even for a trader. You must have seen a great deal, Captain, a great deal. Ah, were I young again—"

Langley threw subtlety aside and asked a few straightforward questions. Getting information out of Valti took patience, you had to listen to a paragraph of self-pity to get a sentence worth hearing, but something emerged. The Society had existed for a thousand years or more, recruited from all planets, even non-human races: it carried on most of the interstellar trade there was, goods which were often from worlds unknown to this little section of the galaxy. Luxuries chiefly, exotic things, but there were also important industrial materials involved, an item which was growing as the civilized planets used up their own resources. For Society personnel, the great spaceships were home, men and women and children living their lives on them. They had their own laws, customs, language, they owed allegiance to no one else. "A civilization in its own right, Captain Langley, a horizontal civilization cutting across the proudly vertical ones rooted on the planets, and in its poor way outliving them all."

"Haven't you a capital—a government—"

"Details, my friend, details we can discuss later. Do come see me,

I am a lonely old man. Perhaps I can offer you some small entertainment. Did you by any chance stop in the Tau Ceti system? No? That's a shame, it would have interested you, the double ring system of Osiris and the natives of Horus and the beautiful, beautiful valleys of Ammon, yes, yes." The names originally given to the planets had changed, also within the Solar System, but not so much that Langley could not recognize what mythical figures the discoverers had had in mind. Valti went on to reminisce about worlds he had seen in the lost lamented days of his youth, and Langley found it an enjoyable conversation.

"Ho, there!"

Valti jumped up and bowed wheezily. "My lord! You honor me beyond my worth. It has been overly long since I saw you."

"All of two weeks," grinned the blond giant in the screaming crimson jacket and blue trousers. He had a wine goblet in one brawny hand, the other held the ankles of a tiny, exquisite dancing girl who perched on his shoulder and squealed with laughter. "And then you diddled me out of a thousand solars, you and your loaded dice."

"Most excellent lord, fortune must now and then smile even on my ugly face; the probability-distribution curve demands it." Valti made washing motions with his hands. "Perhaps my lord would care for revenge some evening next week?"

"Could be. Whoops!" The giant

slid the girl to earth and dismissed her with a playful thwack. "Run along, Thura, Kolin, whatever your name is. I'll see you later." His eyes were very bright and blue on Langley. "Is this the dawn man I've been hearing about?"

"Yes—my lord, may I present Captain Edward Langley? Lord Brannoch dhu Crombar, the Centaurian ambassador."

So this was one of the hated and feared men from Thor. He and Valti were the first recognizably Caucasoid types the American had seen in this age: presumably their ancestors had left Earth before the races had melted into an almost uniform stock here, and possibly environmental factors had had something to do with fixing their distinctive features.

Brannoch grinned jovially, sat down, and told an uproariously improper story. Langley countered with the tale of the cowboy who got three wishes, and Brannoch's guffaw made glasses tremble.

"So you still used horses?" he asked afterward.

"Yes, my lord. I was raised in horse country—we used them in conjunction with trucks. I was . . . going to raise them myself."

Brannoch seemed to note the pain in the spaceman's voice, and with a surprising tact went on to describe his stable at home. "I think you'd like Thor, captain," he finished. "We still have elbow room. How they can breathe with twenty billion hunks of fat meat in the Solar Sys-

tem, I'll never know. Why not come see us sometime?"

"I'd like to, my lord," said Langley, and maybe he wasn't being entirely a liar.

Brannoch sprawled back, letting his interminable legs stretch across the polished floor. "I've kicked around a bit, too," he said. "Had to get out of the system a while back, when my family got the short end of a feud. Spent a hundred years external time knocking around, till I got a chance to make a comeback. Planetography's a sort of hobby with me, which is the only reason I come to your parties, Valti, you kettle-bellied old fraud. Tell me, captain, did you ever touch at Procyon?"

For half an hour the conversation spanned stars and planets. Something of the weight within Langley lifted. The vision of many-faced strangeness spinning through an endless outer dark was one to catch at his heart.

"By the way," said Brannoch, "I've been hearing some rumors about an alien you had along, who broke loose. What's the truth on that?"

"Ah, yes," murmured Valti in his tangled beard. "I, too, have been intrigued, yes, a most interesting sort he seems to be. Why should he take such a desperate action?"

Langley stiffened. What had Chanthavar said—wasn't the whole affair supposed to be confidential?

Brannoch would have his spies, of course; and seemingly Valti did, too. The American had a chilling sense of immense contending powers, a

machine running wild and he caught in the whirling gears.

"I'd rather like to add him to the collection," said Brannoch idly. "That is, not to harm him, just to meet the creature. If he really is a true telepath, he's almost unique."

"The Society would also have an interest in this matter," said Valti diffidently. "The planet may have something to trade worth even such a long trip."

After a moment, he added dreamily: "I think the payment for such information would be quite generous, captain. The Society has its little quirks, and the desire to meet a new race is one. Yes . . . there would be money in it."

"Could be I'd venture a little fling myself," said Brannoch. "Couple million solars—and my protection. These are troubled times, captain. A powerful patron isn't to be sniffed at."

"The Society," remarked Valti, "has extraterritorial rights. It can grant sanctuary, as well as removal from Earth, which is becoming an unsalubrious place. And, of course, monetary rewards—three million solars, as an investment in new knowledge?"

"This is hardly the place to talk business," said Brannoch. "But as I said, I think you might like Thor—or we could set you up anywhere else you chose. Three and a half million."

Valti groaned. "My lord, do you wish to impoverish me? I have a family to support."

"Yeah. One on each planet," chuckled Brannoch.

Langley sat very still. He thought he knew why they all wanted Saris Hronna—but what to do about it?

Chanthavar's short supple form emerged from the crowd. "Oh, there you are," he said. He bowed casually to Brannoch and Valti. "Your servant, my lord and good sir."

"Thanks, Channy," said Brannoch. "Sit down, why don't you?"

"No. Another person would like to meet the captain. Excuse us."

When they were safely into the mob, Chanthavar drew Langley aside. "Were those men after you to deliver this alien up to them?" he asked. There was something ugly on his face.

"Yes," said Langley wearily.

"I thought so. The Solar government's riddled with their agents. Well, don't do it."

A tired, harried anger bristled in Langley. "Look here, son," he said, straightening till Chanthavar's eyes were well below his, "I don't see as how I owe any faction today anything. Why don't you quit treating me like a child?"

"I'm not going to hold you incommunicado, though I could," said Chanthavar mildly. "Isn't worth the trouble, because we'll probably have that beast before long. I'm just warning you, though, that if he should fall into any hands but mine, it'll go hard with you."

"Why not lock me up and be done with it?"

"It wouldn't make you think, as I'll want you to think in case my own search fails. And it's too crude." Chanthavar paused, then said with a curious intensity: "Do you know why I play out this game of politics and war? Do you think maybe I want power for myself? That's for fools who want to command other fools. It's fun to play, though—life gets so thundering tedious otherwise. What else can I do that I haven't done a hundred times already? But it's fun to match wits with Brannoch and that slobbering red-beard. Win, lose, or draw, it's amusing; but I intend to win."

"Ever thought of—compromising?"

"Don't let Brannoch bluff you. He's one of the coldest and cleverest brains in the galaxy. Fairly decent sort—I'll be sorry when I finally have to kill him—but—Never mind!" Chanthavar turned away. "Come on, let's get down to the serious business of getting drunk."

V

There was darkness around Saris Hronna where he crouched, and a wet wind blowing off the canal with a thousand odors of strangeness. The night was full of fear.

He lay in the weeds and mud of the canal bank, flattening his belly to the earth, and listened for those who hunted him.

There was no moon yet, but the stars were high and clear, a distant pulsing glow on the world's edge

told of a city, and for him there was enough gray light for vision. He looked down the straight line of the canal, the ordered rows of wind-rustling grain marching from horizon to horizon, the rounded bulk of somebody's darkened hut three miles off; his nostrils sucked in a cool dank air, green growth and the small warm scurry of wildlife; he heard the slow, light dragging of wind, the remote honking of a bird, the incredibly faint boom of some airship miles overhead; his nerves drank the eddies and pulses of other nerves, other beings—so had he lain in the darknesses of Holat, waiting for an animal he hunted to come by, and letting himself flow into the vast murmurous midnight. But this time he was the quarry, and he could not blend himself to the life of Earth. It was too alien: every smell, every vision, every trembling nerve-current of mouse or beetle, was sawtoothed with strangeness; the very wind blew with another voice.

Below his waiting and his fear, there was a gape of sorrow. Somehow he had gone through time as well as space, somehow the planet he knew and all his folk, mate and cubs and kindred, were a thousand years behind him. He was alone as none of his race had ever been alone. Alone and, lonely.

The philosophers of Holat had been suspicious of that human ship, he remembered bleakly. In their world-view, the universe and every object and process, within it were logically, inevitably finite. Infinity

was a concept which violated some instinct of rightness when taken from pure mathematics into the physical cosmos, and the idea of crossing light-years in no time at all had not made sense.

The blinding sunburst newness of it all had overwhelmed ancient thought. It had been too much of a revelation, those beings from the sky and their ship; it had been too much fun, working with them, learning, finding answers to problems which their un-Holatan minds could not readily see. Caution went by the board for a while.

And as a result, Saris Hronna had fled through a forest like something out of a dream, dodging, ducking, pursued by bolts of energy which sizzled lightning-fashion in his tracks, twisting and turning and hiding with every hunter's trick he knew, to save a life which was ashen in his mouth.

His dog-teeth flashed white as the lips drew back. There was something to live for, even now. Something to kill for.

If he could get back— It was a thought, like one dim candle in a huge and storming night. Holat would not have changed much, even in two thousand years, not unless some human ship had blundered on her again. His folk were not static, there was progress all the time, but it was a growth like evolution, in harmony with the seasons and the fields and the great rhythm of time. He could find himself again.

But—



Something stirred in the sky. Saris Hronna flattened himself as if he would dig into the mud. His eyes narrowed to yellow slits as he focused his mind-senses, straining into heaven for a ghost.

Yes: currents, and not animal but the cold swirl of electrons in vacuum and gas, an undead pulsation which was like a nail scraped along his nerves. It was a small aircraft, he decided, circling in a slow path, reaching out with detectors. It was hunting him.

Maybe he should have submitted meekly. The *Explorer* humans were decent, for Langley he had a growing affection. Maybe these far kin of his were reasonable too—No! There was too much at hazard. There was his whole race.

They did not have this star-spanning technology on Holat. There it was still tools of bone and flint, travel on foot or in a dugout with sails and oars, food from hunting and fishing and the enormous herds of meat animals half-domesticated by telethymic control. One Holatan on the ground could track down a dozen men and kill them in the green stillness of his forests; but one human spaceship could hang in the sky and lash the planet with death.

The aircraft up there was moving away. Saris Hronna snapped after breath, filling his lungs again.

What to do, where to go, how to escape?

His mind shrieked to be a cub again, small and furry, lying on skins in a cave or sod hut and crowding

against the dim vast form of mother. He thought with a sob of the days rolling and tumbling in sunlight, the snug winter nights when they couched underground—singing, talking, joining themselves in the great warm oneness of emotional communion—the times his father had taken him out to learn hunting, even his own turns at herding which had so bored him then. The small, isolated family group was the heart of his society, without it he was lost—and his clan was long dead now.

The aircraft was coming back. Its track was a spiral. How many of them were there, over how many miles of Earth's night?

His mind quivered, less from fear than from hurt and loneliness. The life of Holat was grounded in order, ceremony, the grave courtesies between old and young, male and female, the calm pantheistic religion, the rites of the family at morning and evening: everything in its place, balance, harmony, sureness, always the knowing that life was one enormous unity. And he had been pitched into the foreign dark and was being hounded like a beast.

The fixed pattern of life had not been onerous, because its tensions were released: in the chase and in the libertine orgies of the fairs where families met to trade, discuss plans and policies, mate off the youths, drink and make merry. But here, tonight—

The thing above was coming lower. Saris' muscles grew rigid, and there was a blaze in his heart. Let it

come within range, and he would seize control and smash it into the ground!

He was not wholly unfitted for this moment of murder. There was no domination within a Holatan family, no harsh father or jibing brother, they were all one; and a member who showed real talent was ungrudgingly supported by the others while he worked at his art, or his music, or his thinking. Saris had been that kind, as he emerged from cubhood. Later he had gone to one of the universities.

There he herded cattle, made tools, swept floors, as fitting return for the privilege of lying in the hut of some philosopher or artist or woodworker, arguing with him and learning from him. His particular flair had been for the physical sciences.

They had their learning on Holat, he thought defensively as the metal death dropped slowly toward him. The books were hand-copied on parchment, but there was sound knowledge in them. Astronomy, physics, and chemistry were elementary beside man's, though correct as far as they went. Biological technique, the breeding of animals, the understanding and use of ecology, were at least equal in the areas where no instrument but a simple lens and scalpel were needed—possibly superior. And the mathematicians of Holat had an innate ability which towered above that of any human.

Saris remembered Langley's aston-

ishment at how fast English was learned, at seeing half-grown cubs studying non-Euclidean geometry and the theory of functions. The man had gotten some glimpse of the various schools of philosophy, the lively discussion that went on between them, and had rather ruefully admitted that their rigorous logic, their highly developed semantics, their mutual grounding in a hard empirical common sense, made them more valuable tools than anything of the sort his race had ever produced. It had been a philosopher, the same who first clarified the relationship between discontinuous functions and ethics, who had suggested the key improvement in the *Explorer's* circuits.

The craft was hovering, as if it were a bird of prey readying to swoop. Still out of control range—they must have detectors, perhaps of infrared, which made them suspect his presence. He dared not move.

The safest thing for them to do would be to drop a bomb. Langley had told him about bombs. And that would be the end—a flash and roar he could not feel, dissolution, darkness forever.

Well, he thought, feeling how the slow sad wind ruffled his whiskers, he had little to complain of. It had been a good life. He had been one of the wandering scholars who drifted around the world, always welcomed for the news he could bring, always seeing something fresh in the diversity of basically similar cultures which dotted his planet. His sort

bound a planet together. Lately he had settled down, begun a family, taught at the University of Sundance-Through-Rain—but if it came to swift death in an unknown land, life had still been kind.

No, no! He brought his mind up sharply. He could not die, not yet. Not until he knew more, knew that Holat was safe from these pale hairless monsters or knew how to warn and defend her. His muscles bunched to break and run.

The airship descended with a swiftness that sucked a gasp from him. He reached out to grasp the swirling electric and magnetic streams with the force-fields of his brain—and withdrew, shuddering.

No. Wait. There might be a better way.

The craft landed in the fields, a good hundred yards off. Saris gathered his legs and arms under him. How many were there?

Three. Two of them were getting out, the third staying inside. He couldn't see through the tall stand of grain, but he could sense that one of the two carried some kind of instrument which was not a weapon—a detector, then. Blind in the dark, they could still track him.

But, of course, they weren't sure it was Saris. Their instrument could just as well be registering a stray animal, or a man. He could smell the sharp adrenalin stink of their fear.

In a gliding rush, Saris Hronna went up the bank and four-legged through the grain.

Someone yelled. A bolt of energy

snapped at him, the vegetation flamed up where it struck and ozone scorched his nostrils. His mind could not take care of the weapons, it had already clamped down on the engine and communicator of the vessel.

He hardly felt the beam which sizzled along his ribs, leaving a welt of burned flesh. Leaping, he was on the nearest man. The figure went down, his hands tore out its throat, and he sprang aside as the other one fired.

Someone cried out, a thin panicky wail in the darkness. A gun which threw a hail of lead missiles chattered from the boat's nose. Saris jumped, landing on the roof. The man remaining outside was flashing a light, trying to catch him in its ray. Coldly, the Holatan estimated distances. Too far.

He yowled, sliding to earth again as he did. The flashlight and a blaster beam stabbed where he had been. Saris covered the ground between in three leaps. Rising, he cuffed hard, and felt neckbones snap under his palm.

Now—the boat! Saris snuffed at the door. It was locked against him, and the lock was purely mechanical, not to be controlled by the small energy output of his brain. He could feel the terror of the man huddled inside.

Well— He picked up one of the dropped blasters. For a moment he considered it, using the general principle that function determines form.

The hand went around this grip, one finger squeezed this lever, the fire spat from the other end—that adjustment on the nose must regulate the size of the beam. He experimented and was gratified at having his deductions check out. Returning to the boat, he melted away its door lock.

The man within was backed against the farther wall, a gun in his hand, waiting with a dry scream in his throat for the devil to break through. Saris pinpointed him telepathically—aft of the entrance—good! Opening the door a crack, just enough to admit his hand, he fired around the edge of it. The blaster was awkward in a grasp the size of his, but one bolt was enough.

The smell of burned meat was thick around him. Now he had to work fast; there must be other craft in the vicinity. Collecting all the weapons, he hunched himself over the pilot's chair—it was too small for him to sit in—and studied the control panel.

The principle used was unfamiliar, something beyond the science of Langley's time. Nor could he read the symbols on the controls. But by tracing the electric currents and gyromagnetic fields with his mind, and applying logic, he got a notion of how to operate the thing.

It rose a little clumsily as he maneuvered the switches, but he got the hang of it fast. Soon he was high in the sky, speeding through a darkness that whistled around him. One screen held an illuminated map with

a moving red point that must represent his own location. Helpful.

He couldn't stay in this machine long, it would be identified and shot down. He must use it to get supplies and then to find a hiding place before dawn, after which it must fly westward to crash in the ocean. He should be able to adjust the automatic pilot to do that.

Where to go? What to do?

He needed some place where he could lie concealed and think, whence he could go forth to spy, to which he could return and make a stand if luck went against him. He needed time in which to learn and decide.

These humans were a strange race. He didn't understand them. He had talked much with Langley, there was a comradeship between them, but there had been things half-seen in Langley, too, which had crawled on his nerves. That near-religious concept of exploring all space, simply for its own sake—that wasn't Holatan. Aside from its pursuit of pure, abstract knowledge, the Holatan mind was not idealistic, it found something vaguely obscene in the

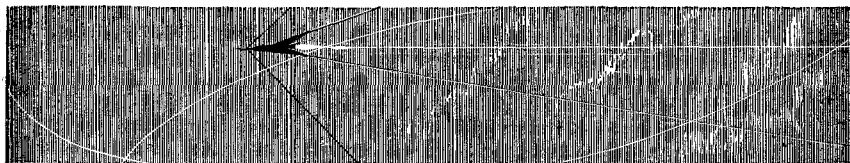
picture of utter dedication to an impersonal cause.

These new humans who now held Earth might make a cause out of conquering Holat. The distance was enormous, but you never knew.

It might be safest and wisest to destroy their whole civilization, send them back to the caves. That was an ambitious project, probably too much to attempt; but surely he could do something; if only by playing one faction off against another. He had a pretty good notion already of why they were so anxious to catch or kill him.

He would have to wait, and observe, and think, before deciding on a course of deeds. That required a place in which to lie hidden, and he thought he knew where to go. It was worth trying, at least. He studied the unrolling map, comparing it with those of Langley's he had seen and put into a well-trained eidetic memory, translating the symbolism by correspondence and estimating the effects of five thousand years' change. Then he turned the boat northeastward and crouched down to wait.

TO BE CONTINUED

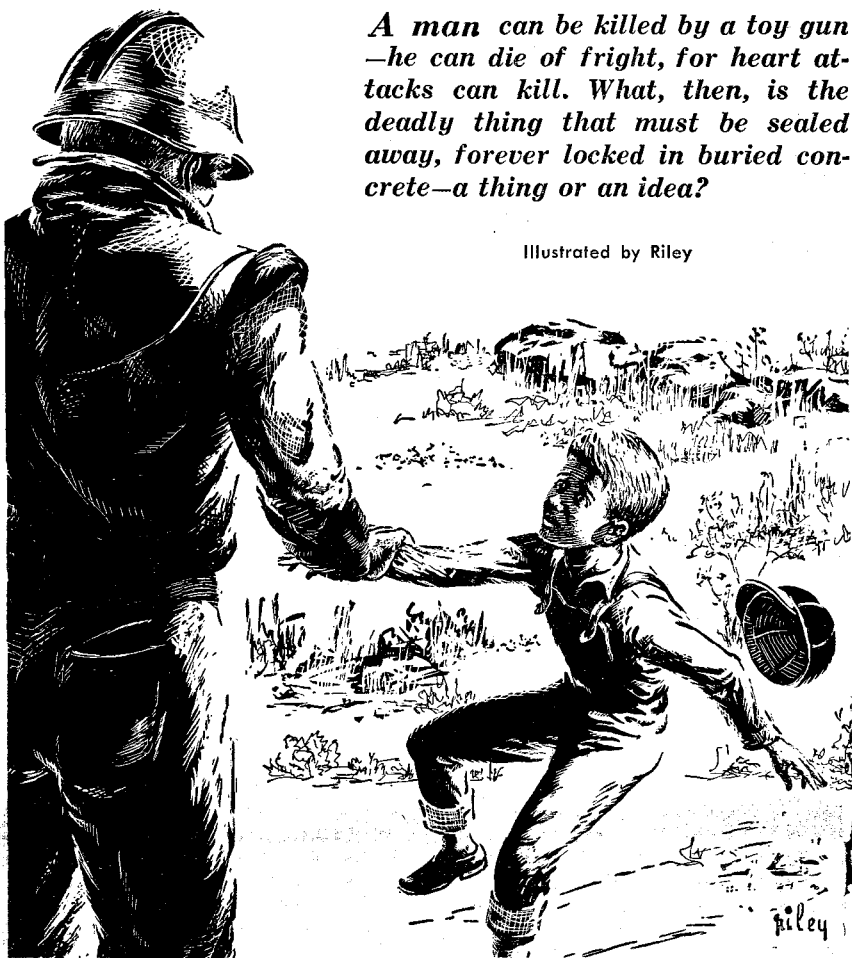


THE STUTTERER

BY R. R. MERLISS

A man can be killed by a toy gun—he can die of fright, for heart attacks can kill. What, then, is the deadly thing that must be sealed away, forever locked in buried concrete—a thing or an idea?

Illustrated by Riley



Out of the twenty only one managed to escape the planet. And he did it very simply, merely by walking up to the crowded ticket window at one of the rocket ports and buying passage to Earth. His Army identification papers passed the harassed inspection of the agent, and he gratefully and silently pocketed the small plastic stub that was handed him in exchange for his money.

He picked his way with infinite care through the hordes of ex-soldiers clamoring for passage back to the multitudinous planets from which they had come. Then he slowly climbed the heavy ramp into the waiting rocket.

He saw with relief that the seats were strongly constructed, built to survive the pressure of many gravities, and he chose one as far removed as possible from the other passengers.

He was still very apprehensive, and, as he waited for the rocket to take off, he tried hard to remember the principles of the pulse drive that powered the ship, and whether his additional weight would upset its efficiency enough to awaken suspicion.

The seats filled quickly with excited hurrying passengers. Soon he heard the great door clang shut, and saw the red light flicker on, warning of the take-off. He felt a slow surge of pressure as the ship arose from the ground, and his chair creaked ominously with the extra weight. He became fearful that it

might collapse, and he strained forward trying to shift some of the pressure through his feet to the floor. He sat that way, tense and immobile, for what seemed a long time until abruptly the strain was relieved and he heard the rising and falling whine of the rockets that told him the ship was in pulse drive, flickering back and forth across the speed of light.

He realized that the pilots had not discovered his extra weight, and that the initial hazards were over. The important thing was to look like a passenger, a returning soldier like the others, so that no one would notice him and remember his presence.

His fellow travelers were by this time chatting with one another, some playing cards, and others watching the teledriven screens. These were the adventurers who had flocked from all corners of the galaxy to fight in the first national war in centuries. They were the uncivilized few who had read about battle and armed struggle in their history books and found the old stories exciting.

They paid no attention to their silent companion who sat quietly looking through the quartz windows at the diamond-bright stars, tacked against the blackness of infinity.

The fugitive scarcely moved the entire time of the passage. Finally when Earth hung out in the sky like a blue balloon, the ship cut its pulsations and swung around for a tail landing.

The atmosphere screamed through

the fins of the rocket, and the continents and the countries, and then the rivers and the mountains took shape. The big ship settled down as gently as a snowflake, shuddered a few times and was quiet.

The passengers hurriedly gathered up their scattered belongings and pushed toward the exit in a great rush to be out and back on Earth.

The fugitive was the last to leave. He stayed well away from the others, being fearful that, if he should touch or brush up against someone, his identity might be recognized.

When he saw the ramp running from the ship to the ground, he was dismayed. It seemed a flimsy structure, supported only by tubular steel. Five people were walking down it, and he made a mental calculation of their weight—about eight hundred pounds he thought. He weighed five times that. The ramp was obviously never built to support such a load.

He hesitated, and then he realized that he had caught the eye of the stewardess waiting on the ground. A little panicky, he stepped out with one foot and he was horrified to feel the steel buckle. He drew back hastily and threw a quick glance at the stewardess. Fortunately at the moment she was looking down one field and waving at someone.

The ramp floor was supported by steel tubes at its edges and in its exact center. He tentatively put one foot in the middle over the support and gradually shifted his weight to

it. The metal complained creakily, but held, and he slowly trod the exact center line to Earth. The stewardess' back was turned toward him as he walked off across the field toward the customhouse.

He found it comforting to have under his feet what felt like at least one yard of cement. He could step briskly and not be fearful of betraying himself.

There was one further danger: the customs inspector.

He took his place at the end of the line and waited patiently until it led him up to a desk at which a uniformed man sat, busily checking and stamping declarations and traveling papers. The official, however, did not even look up when he handed him his passport and identification.

"Human. You don't have to go through immigration," the agent said. "Do you have anything to declare?"

"N-no," the traveler said. "I didn't bring anything in."

"Sign the affidavit," the agent said and pushed a sheet of paper toward him.

The traveler picked up a pen from the desk and signed "Jon Hall" in a clear, perfect script.

The agent gave it a passing glance and tossed it into a wire basket.

Then he pushed his uniform cap back exposing a bald head. "You're my last customer for a while, until the rocket from Sirius comes in. Guess I might as well relax for a minute." He reached into a drawer

of the desk and pulled out a package of cigarettes, of which he lit one.

"You been in the war, too?" he asked.

Hall nodded. He did not want to talk any more than he had to.

The agent studied his face.

"That's funny," he said after a minute. "I never would have picked you for one of these so-called adventurers. You're too quiet and peaceful looking. I would have put you down as a doctor or maybe a writer."

"N-no," Hall said. "I w-was in the war."

"Well, that shows you can't tell by looking at a fellow," the agent said philosophically. He handed Hall his papers. "There you are. The left door leads out to the copter field. Good luck on Earth!"

Hall pocketed the stamped documents. "Thanks," he said. "I'm glad to be here."

He walked down the wide station room to a far exit and pushed the door open. A few steps farther and he was standing on a cement path dug into a hillside.

Across the valley, bright in the noon sun lay the pine covered slopes of the Argus mountains, and at his feet the green Mojave flowering with orchards stretched far to the north and south. Between the trees, in the center of the valley, the Sacramento River rolled southward in a man-made bed of concrete and steel giving water and life to what had a century before been dry dead earth.

There was a small outcropping

of limestone near the cement walk, and he stepped over to it and sat down. He would have been happy to rest and enjoy for a few moments his escape and his triumph, but he had to let the others know so that they might have hope.

He closed his eyes and groped across the stars toward Grismet. Almost immediately he felt an impatient tug at his mind, strong because there were many clamoring at once to be heard. He counted them. There were seventeen. So one more had been captured since he had left Grismet.

"Be quiet," he told them. "I'll let you see, after a while. First I have to reach the two of us that are still free."

Obediently, the seventeen were still, and he groped some more and found another of his kind deep in an ice cave in the polar regions of Grismet.

"How goes it?" he asked.

The figure on Grismet lay stretched out at full length on the blue ice, his eyes closed. He answered without moving: "They discovered my radiation about an hour ago. Pretty soon, they'll start blasting through the ice."

The one on Earth felt the chill despair of his comrade and let go. He groped about again until he found the last one, the only other one left. He was squatting in the cellar of a warehouse in the main city of Grismet.

"Have they picked up your trail yet?" he asked.

"No," answered the one in the cellar. "They won't for a while. I've scattered depots of radiation all through the town. They'll be some time tracking them all down, before they can get to me."

In a flash of his mind, Hall revealed his escape and the one on Grismet nodded and said: "Be careful. Be very careful. You are our only hope."

Hall returned then to the seventeen, and he said with his thoughts: "All right, now you can look." Immobile in their darkness, they snatched at his mind, and as he opened his eyes, they, too, saw the splendors of the mountains and the valley, the blue sky, and the gold sun high overhead.

The new man was young, only twenty-six. He was lean and dark and very enthusiastic about his work. He sat straight in his chair waiting attentively while his superior across the desk leafed through a folder.

"Jordan. Tom Jordan," the older man finally said. "A nice old Earth name. I suppose your folks came from there."

"Yes, sir," the new man said briskly.

The chief closed the folder.

"Well," he said, "your first job is a pretty important one."

"I realize that, sir," Jordan said. "I know it's a great responsibility for a man just starting with the Commission, but I'll give it every thing I have."

The chief leaned back in his seat

and scratched his chin thoughtfully.

"Normally we start a beginner like you working in a pair with an older man. But we just haven't got enough men to go around. There are eight thousand planets there"—he pointed with his thumb over his shoulder to a wall-sized map of the galaxy—"and we've got to cover every one. It seems reasonable that if he escaped this planet, he'll go to another that will by its atmosphere or its temperature give him some natural advantage over us—some place that is either burning hot or at absolute zero, or perhaps with a chlorine or sulfur dioxide atmosphere. That's why"—he hesitated a minute, but continued because he was a truthful man—"I picked you for Earth. It's the most populated of all the planets and it seems the least likely one that he would choose."

Jordan's face dropped a little bit when he heard the last piece of information, but he said: "I understand, sir, and if he's there, I'll bring him back."

The chief slouched farther back in his seat. He picked up a shard of rubidium that served as a paper weight and toyed with it.

"I guess you know most of the facts. They are made out of permallium. Have you ever seen any of the stuff?"

The new man shook his head. "I read about it though—some new alloy, isn't it?"

"Plenty new. It's the hardest stuff anybody has ever made. If you set

off one hundred successive atom blasts over a lump of permallium, you might crystallize and scale maybe a micron off the surface. It will stand any temperature or pressure we can produce. That just means there's no way to destroy it."

Jordan nodded. He felt a little honored that the chief was giving him this explanation in person rather than just turning him over to one of the scientific personnel for a briefing. He did not understand that the old man was troubled and was talking the situation through as much for his own sake as for anyone else's.

"That's the problem," the chief continued. "Essentially an indestructible machine with a built-in source of power that one can't reach. It had to be built that way—a war instrument, you know."

He stopped and looked squarely at the bright young man sitting across the desk. "This lousy war. You'd think the human race would grow up some time, wouldn't you?" He filled a pipe with imported Earth tobacco and lit it, and took a few deep puffs. "There's something else. I don't know how they do it, but they can communicate with one another over long distances. That made them very useful for military purposes.

"They are loyal to one another, too. They try to protect each other and keep one another from being captured. Do you find that surprising?"

The question caught Jordan unprepared. "Well, yes. It is, kind of—" he said. "They are only machines."

The chief closed his eyes for a moment. He seemed tired.

"Yes," he repeated, "they are only machines. Anyway, we don't know everything about them, even yet. There are still a few secret angles, I think. The men who could tell us are either dead or in hiding.

"There's one fact though that gives us a great advantage. Their brain"—he stopped on the word and considered it—"I mean their thinking apparatus gives off a very penetrating short-wave length radiation which you can pick up on your meters anywhere in a radius of two thousand miles, and you can locate the source accurately if you get within fifty miles.

"The only real problem you'll have in finding them is the confusion created by illegal atomic piles. You'd be surprised how many of them we have turned up recently. They are owned by private parties and are run illegally to keep from paying the tax on sources of power. You have to track those down, but once you get them labeled it will be clear sailing."

He stopped to take a few puffs on his pipe.

"Don't try to be a hero," he said after a few moments. "Don't get close to the thing you are hunting. None of them yet has injured any of us, but if one should want to, he could crush you to death with two

fingers. Use the permallium nets and net bombs if you locate him."

He tamped his pipe out. "Well, that's it," he said.

The new man arose. "I want you to know that I appreciate the trust you have put in me."

"Sure, sure," the chief said, but it was not unfriendly. "Do you like the job?"

"It is a great opportunity," Jordan said, and he meant it.

"What do you think about what we do to them after we capture them?"

The new man shrugged. "I suppose it's the only thing to do. It's not as though they were human."

"Yeah," the chief said. "I guess so. Anyway, good luck."

Jordan arose and shook the chief's hand. However, just as he was stepping through the door, his superior asked him another question. "Did you know that one of them stutters?"

He turned back, puzzled. "Stutters? Why should he stutter? How could that be?"

The chief shook his head and started cleaning out his pipe.

"I don't know for sure. You'd better get started." He sat back in his seat and watched the back of the new man as he disappeared through the doorway.

That young fellow has a lot to learn, he thought to himself. But even so, maybe he's better off than I am. Maybe I've had too much experience. Maybe too much experience puts you back where you started

from. You've done the wrong thing so many times and profited so many times from your mistakes that you see errors and tragedies in everything.

He was depressed, and he did something that usually made him feel better again. He reached under the edge of his desk and pulled a little switch that made the galactic map on the wall light up in three-dimensional depth, then he swung around in his chair so he could see it. Eight thousand planets that his race had conquered, eight thousand planets hundreds of light-years apart. Looking at the map gave him a sense of accomplishment and pride in humanity which even a stupid war and its aftermath could not completely destroy.

Jon Hall, the fugitive, walked along the highway leading south from the rocket port. There was very little traffic, only an occasional delivery truck carrying meat or groceries. The real highway was half a mile overhead where the copters shuttled back and forth up and down the state in neat orderly layers.

The seventeen were inside his head, looking through his eyes, and feasting on the blueness of the sky, and the rich green vegetation that covered the fertile fields. From time to time they talked to him, giving advice, asking questions, or making comments, but mostly they looked, each knowing that the hours of their sight might be very few.

After walking a while, Hall be-

came aware of someone's footsteps behind him. He stopped suddenly in apprehension and swung around. A dozen or so paces away was a red-headed boy of about ten or eleven, dressed in plastic overalls, and carrying a basket of ripe raspberries. The stains about his mouth showed that not all the raspberries were carried in the basket.

Hall's anxiety faded, and he was glad to see the child. He had hoped to meet someone who was not so old that they would become suspicious, but old enough that they might give him directions.

He waited for the lad to catch up.

"Hello," the boy said. "I've been walking behind you most of a mile, but I guess you didn't hear me."

"It looks as though you've been p-p-picking raspberries," Hall said.

"Yup. My dad owns a patch by the river. Want some?" He proffered the basket.

"No, thank you," Hall answered. He resumed his walk up the highway with the boy at his side.

"D-do you live around here," he asked.

"Just up the road a ways." The lad studied his companion for a minute. "You stutter, don't you?"

"A little."

"There was a boy in my class who used to stutter. The teacher said it was because he thought so far ahead of what he said he got all tangled up." The boy reached in his basket for a handful of berries and chewed them thoughtfully. "She was always

after him to talk slower, but I guess it didn't do any good. He still stutters."

"Is there a p-power plant around here?" Hall asked. "You know, where the electricity comes from."

"You mean the place where they have the nu-nuclear fission"—the boy stumbled on the unfamiliar word, but got it out—"and they don't let you in because you get poisoned or something?"

"Yes, I think that's it."

"There are two places. There's one over at Red Mountain and another over at Ballarat."

"Where are they?"

"Well—" The boy stopped to think. "Red Mountain's straight ahead, maybe ten miles, and Ballarat's over there"—he pointed west across the orange groves—"maybe fifteen miles."

"Good," Hall said. "Good." And he felt glad inside of himself. Maybe it could be done, he thought.

They walked along together. Hall sometimes listening to the chattering of the boy beside him, sometimes listening to and answering the distant voices of the seventeen. Abruptly, a few hundred yards before the house that the boy had pointed out as his father's, a small sports car whipped down the highway, coming on them almost without warning. The lad jumped sideways, and Hall, to avoid touching him, stepped off the concrete road. His leg sank into the earth up to the midcalf. He pulled it out as quickly as he could.

The boy was looking at the fast retreating rear of the sports car.

"Gee," he said. "I sure didn't see them coming." Then he caught sight of the deep hole alongside the road, and he stared at it. "Gosh, you sure made a footprint there," he said wonderingly.

"The ground was soft," Hall said. "C-come along."

But instead of following, the boy walked over to the edge of the road and stared into the hole. He tentatively stamped on the earth around it. "This ground isn't soft," he said. "It's hard as a rock." He turned and looked at Hall with big eyes.

Hall came close to the boy and took hold of his jacket. "D-don't pay any attention to it, son. I just stepped into a soft spot."

The boy tried to pull away. "I know who you are," he said. "I heard about you on the teledepth."

Suddenly, in the way of children, panic engulfed him and he flung his basket away and threw himself back and forth, trying to tear free. "Let me go," he screamed. "Let me go. Let me go."

"Just l-listen to me, son," Hall pleaded. "Just listen to me. I won't hurt you."

But the boy was beyond reasoning. Terror stricken, he screamed at the top of his voice, using all his little strength to escape.

"If you p-promise to l-listen to me, I'll let you go," Hall said.

"I promise," the boy sobbed, still struggling.

But the moment Hall let go of

his coat, he tore away and ran as fast as he could over the adjacent field.

"W-wait—don't run away," Hall shouted. "I won't hurt you. Stay where you are. I couldn't follow you anyway. I'd sink to my hips."

The logic of the last sentence appealed to the frightened lad. He hesitated and then stopped and turned around, a hundred feet or so from the highway.

"L-listen," said Hall earnestly. "The teledepths are wr-wrong. They d-didn't tell you the t-truth about us. I d-don't want to hurt anyone. All I n-need is a few hours. D-don't tell anyone for j-just a few hours and it'll be all right." He paused because he didn't know what to say next.

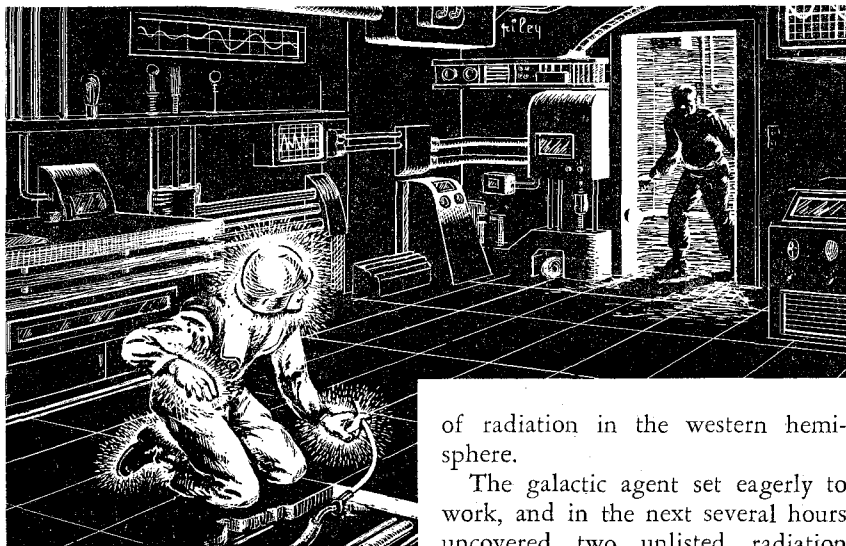
The boy, now that he seemed secure from danger had recovered his wits. He plucked a blade of grass from the ground and chewed on an end of it, looking for all the world like a grownup farmer thoughtfully considering his fields. "Well, I guess you could have hurt me plenty, but you didn't," he said. "That's something."

"Just a few hours," Hall said. "It won't take long. Y-you can tell your father tonight."

The boy suddenly remembered his raspberries when he saw his basket and its spilled contents on the highway.

"Why don't you go along a bit," he said. "I would like to pick up those berries I dropped."

"Remember," Hall said, "just a few hours." He turned and started



walking again toward Red Mountain. Inside his mind, the seventeen asked anxiously, "Do you think he'll give the alarm? Will he report your presence?"

Back on the highway, the boy was gathering the berries back into his basket while he tried to make his mind up.

Jordan reached Earth atmosphere about two o'clock in the afternoon. He immediately reported in to the Terrestrial police force, and via the teledepth screen spoke with a bored lieutenant. The lieutenant, after listening to Jordan's account of his mission, assured him without any particular enthusiasm of the willingness of the Terrestrial forces to co-operate, and of more value, gave him the location of all licensed sources

of radiation in the western hemisphere.

The galactic agent set eagerly to work, and in the next several hours uncovered two unlisted radiation sources, both of which he promptly investigated. In one case, north of Eugene, he found in the backyard of a metal die company a small atomic pile. The owner was using it as an illegal generator of electricity, and when he saw Jordan snooping about with his detection instruments, he immediately offered the agent a sizable bribe. It was a grave mistake since Jordan filed charges against him, via teledepth, not only for evading taxes, but also for attempted bribery.

The second strike seemed more hopeful. He picked up strong radiation in a rather barren area of Montana; however when he landed, he found that it was arising from the earth itself. From a short conversation with the local authorities, he learned that the phenomenon was well known: an atomic fission plant

had been destroyed at that site during the Third World War.

He was flying over the lovely blue water of Lake Bonneville, when his teleddepth screen flickered. He flipped the switch on and the lieutenant's picture flooded in.

"I have a call I think you ought to take," the Earth official said. "It seems as though it might be in your line. It's from a sheriff in a small town in California. I'll have the operator plug him in."

Abruptly the picture switched to that of a stout red-faced man wearing the blue uniform of a county peace officer.

"You're the galactic man?" the sheriff asked.

"Yes. My name is Tom Jordan," Jordan said.

"Mine's Berkhammer." It must have been warm in California because the sheriff pulled out a large handkerchief and mopped his brow. When he was done with that he blew his nose loudly. "Hay fever," he announced.

"Want to see my credentials?"

"Oh sure, sure," the sheriff hastily replied. He scrutinized the card and badge that Jordan displayed. After a moment, he said, "I don't know why I'm looking at those. They might be fakes for all I know. Never saw them before and I'll probably never see them again."

"They're genuine."

"The deuce with formality," the sheriff said heavily. "There's some kid around here who thinks he saw

that . . . that machine you're supposed to be looking for."

"When was that?" Jordan asked.

"About four hours ago. Here, I'll let you talk to him yourself." He pulled his big bulk to one side, and a boy and his father walked into the picture. The boy was red-eyed, as though he had been crying. The father was a tall, stoop-shouldered farmer, dressed like his son in plastic overalls.

The sheriff patted the boy on the back. "Come on, Jimmy. Tell the man what you saw."

"I saw him," the boy said sullenly. "I walked up the highway with him."

Jordan leaned forward toward the screen.

"How did you know who he was?"

"I knew because when he stepped on the ground, he sank into it up to his knee. He tried to say the ground was soft, but it was hard. I know it was hard."

"Why did you wait so long to tell anybody?" Jordan asked softly.

The boy looked at him with defiance and dislike in his eyes and kept his small mouth clamped shut.

His father nudged him roughly in the ribs.

"Answer the man," he commanded.

Jimmy looked down at his shoes.

"Because he asked me not to tell for a while," he said curtly.

"Stubborn as nails," the father said not without pride in his voice.

"Got more loyalty to a lousy machine than to the whole human race."

"Which way did he go, Jimmy?"

"Toward Red Mountain. I think maybe to the power house. He asked me where it was."

"What do you think he wants with that?" the sheriff asked of Jordan.

Jordan shrugged and shook his head.

"Maybe it's all in the kid's head," the sheriff suggested. "These wild teledrill programs they look at give them all kinds of ideas."

"It isn't in my head," Jimmy said violently. "I saw him. He stepped on the ground and stuck his foot into it. I talked to him. And I know something else. He stutters."

"What?" said the sheriff. "Now I know you're lying."

The father started dragging the boy by the arm. "Come on home, Jimmy. You got one more licking coming."

Jordan, however, was sure the boy was not lying. "Leave him alone," he said. "He's right. He did see him." He took a fast look at the timepiece on his panel board. "I'll be down in an hour and a half. Wait for me."

He flicked the switch off, and kicked up the motors. The ship shot southward almost as rapidly as a projectile.

He had topped the Sierras and had just turned into the great central valley of California when, with the impact of a blow, a frightening thought occurred to him.

He flicked the screen on again, and he caught the sheriff sitting behind his desk industriously scratching himself in one armpit.

"Listen," Jordan said, speaking very fast. "You've got to send out a national alarm. You must get every man you can down to the power plant. You've got to stop him from getting in."

The sheriff stopped scratching himself and stared at Jordan.

"What are you so het up about, young man?"

"Do it, and do it now," Jordan almost shouted. "He'll tear the pile apart and let the hafnium go off. It'll blow half the state off the planet."

The sheriff was unperturbed. "Mr. Star boy," he said sarcastically, "any grammar school kid knows that if someone came within a hundred yards of one of those power-house piles, he'd burn like a match stick. And besides why would he want to blow himself to pieces?"

"He's made out of permallium." Jordan was shouting now.

The sheriff suddenly grew pale. "Get off my screen. I'm calling Sacramento."

Jordan set the ship for maximum speed, well beyond the safety limit. He kept peering ahead into the dusk, momentarily fearful that the whole countryside would light up in one brilliant flash. In a few minutes he was sweating and trembling with the tension.

Over Walnut Grove, he recog-

nized the series of dams, reservoirs and water-lifts where the Sacramento was raised up out of its bed and turned south. For greater speed, he came close to Earth, flying at emergency height, reserved ordinarily for police, firemen, doctors and ambulances. He set his course by sight following the silver road of the river, losing it for ten or fifteen miles at a time where it passed through subterranean tunnels, picking it up again at the surface, always shooting south as fast as the atmosphere permitted.

At seven thirty, when the sun had finally set, he sighted the lights of Red Mountain, and he cut his speed and swung in to land. There was no trouble picking out the power plant; it was a big dome-shaped building surrounded by a high wall. It was so brilliantly lit up, that it stood out like a beacon, and there were several hundred men milling about before it.

He settled down on the lawn inside the walls, and the sheriff came bustling up, a little more red in the face than usual.

"I've been trying to figure for the last hour what the devil I would do to stop him if he decided to come here," Berkhammer said.

"He's not here then?"

The sheriff shook his head. "Not a sign of him. We've gone over the place three times."

Jordan settled back in relief, sitting down in the open doorway of his ship. "Good," he said wearily.

"Good!" the sheriff exploded. "I don't know whether I'd rather have

him show up or not. If this whole business is nothing more than the crazy imagination of some kid who ought to get tanned and a star-cop with milk behind his ears, I'm really in the soup. I've sent out an alarm and I've got the whole state jumping. There's a full mechanized battalion of state troops waiting in there." He pointed toward the power plant. "They've got artillery and tanks all around the place."

Jordan jumped down out of the ship. "Let's see what you've got set up here. In the meantime, stop fretting. I'd rather see you fired than vaporized along with fifty million other people."

"I guess you're right there," Berkhammer conceded, "but I don't like to have anyone make a fool out of me."

At Ballarat, an old man, Eddie Yudovich, was the watchman and general caretaker of the electrical generation plant. Actually, his job was a completely unnecessary one, since the plant ran itself. In its very center, buried in a mine of graphite were the tubes of hafnium, from whose nuclear explosions flowed a river of electricity without the need of human thought or direction.

He had worked for the company for a long time and when he became crippled with arthritis, the directors gave him the job so that he might have security in his latter years.

Yudovich, however, was a proud old man, and he never once acknowl-

edged to himself or to anyone else that his work was useless. He guarded and checked the plant as though it were the storehouse of the Terrestrial Treasury. Every hour punctually, he made his rounds through the building.

At approximately seven thirty he was making his usual circuit when he came to the second level. What he discovered justified all the years of punctilious discharge of his duties. He was startled to see a man kneeling on the floor, just above where the main power lines ran. He had torn a hole in the composition floor, and as Yudovich watched, he reached in and pulled out the great cable. Immediately the intruder glowed in the semidarkness with an unearthly blue shine and sparkles crackled off of his face, hands and feet.

Yudovich stood rooted to the floor. He knew very well that no man could touch that cable and live. But as he watched, the intruder handled it with impunity, pulling a length of wire out of his pocket and making some sort of a connection.

It was too much for the old man. Electricity was obviously being stolen. He roared out at the top of his voice, and stumped over to the wall where he threw the alarm switch. Immediately, a hundred arc lights flashed on, lighting the level brighter than the noon sun, and a tremendously loud siren started wailing its warning to the whole countryside.

The intruder jumped up as though he had been stabbed. He dropped

the wires, and after a wild look around him, he ran at full speed toward the far exit.

"Hold on there," Yudovich shouted and tried to give chase, but his swollen, crooked knees almost collapsed with the effort.

His eyes fell on a large wrench lying on a worktable, and he snatched it up and threw it with all his strength. In his youth he had been a ball player with some local fame as a pitcher, and in his later life, he was addicted to playing horseshoes. His aim was, therefore, good, and the wrench sailed through the air striking the runner on the back of the head. Sparks flew and there was a loud metallic clang, the wrench rebounding high in the air. The man who was struck did not even turn his head, but continued his panicky flight and was gone in a second.

When he realized there was no hope of effecting a capture, Yudovich stumped over to see the amount of the damage. A hole had been torn in the floor, but the cable itself was intact.

Something strange caught his attention. Wherever the intruder had put his foot down, there were many radiating cracks in the composition floor, just as though someone had struck a sheet of ice with a sledge hammer.

"I'll be danged," he said to himself. "I'll be danged and double danged."

He turned off the alarm and then went downstairs to the teledepth screen to notify the sheriff's office.

A few hundred yards from the powerhouse, Jon Hall stood in the darkness, listening to the voices of his fellows. There were eighteen of them, not seventeen, for a short while before the one in the ice cave had been captured, and they railed at him with a bitter hopeless anger.

He looked toward the bright lights of the powerhouse, considering whether he should return. "It's too late," said one of them. "The alarm is already out." "Go into the town and mix with the people," another suggested. "If you stay within a half-mile of the hafnium pile, the detection man will not be able to pick up your radiation and maybe you will have a second chance."

They all assented in that, and Hall, weary of making his own decisions turned toward the town. He walked through a tree-lined residential street, the houses with neatly trimmed lawns, and each with a copter parked on the roof. In almost every house the teledepths were turned on and he caught snatches of bulletins about himself: "... Is known to be in the Mojave area." "... About six feet in height and very similar to a human being. When last seen, he was dressed in—" "Governor Leibowitz has promised speedy action and attorney general Markle has stated—"

The main street of Ballarat was brilliantly lighted. Many of the residents, aroused by the alarm from the powerhouse, were out, standing in small groups in front of the stores and talking excitedly to one another.

He hesitated, unwilling to walk through the bright street, but uncertain where to turn. Two men talking loudly came around the corner suddenly and he stepped back into a store entrance to avoid them. They stopped directly in front of him. One of them, an overalled farm hand from his looks, said, "He killed a kid just a little while ago. My brother-in-law heard it."

"Murderer," the other said viciously.

The farmer turned his head and his glance fell on Hall. "Well, a new face in town," he said after a moment's inspection. "Say I bet you're a reporter from one of the papers, aren't you?"

Hall came out of the entrance and tried to walk around the two men, but the farmer caught him by the sleeve.

"A reporter, huh? Well, I got some news for you. That thing from Grismet just killed a kid."

Hall could restrain himself no longer.

"That's a lie," he said coldly.

The farmer looked him up and down.

"What do you know about it," he demanded. "My brother-in-law got it from somebody in the state guard."

"It's still a lie."

"Just because it's not on the teledepth, you say it's a lie," the farmer said belligerently. "Not everything is told on the teledepth, Mr. Wiseheimer. They're keeping it a secret. They don't want to scare the people."

Hall started to walk away, but the farmer blocked his path.

"Who are you anyway? Where do you live? I never saw you before," he said suspiciously.

"Aw, Randy," his companion said, "don't go suspecting everybody."

"I don't like anyone to call me a liar."

Hall stepped around the man in his path, and turned down the street. He was boiling inside with an almost uncontrollable fury.

A few feet away, catastrophe suddenly broke loose. A faulty section of the sidewalk split without warning under his feet and he went pitching forward into the street. He clutched desperately at the trunk of a tall palm tree, but with a loud snap, it broke, throwing him head on into a parked road car. The entire front end of the car collapsed like an egg shell under his weight.

For a long moment, the entire street was dead quiet. With difficulty, Hall pulled himself to his feet. Pale, astonished faces were staring at him from all sides.

Suddenly the farmer started screaming. "That's him. I knew it. That's him." He was jumping up and down with excitement.

Hall turned his back and walked in the other direction. The people in front of him faded away, leaving a clear path.

He had gone a dozen steps when a man with a huge double-barreled shotgun popped out from a store front just ahead. He aimed for the

middle of Hall's chest and fired both barrels.

The blast and the shot struck Hall squarely, burning a large hole in his shirt front. He did not change his pace, but continued step by step.

The man with the gun snatched two shells out of his pocket and frantically tried to reload. Hall reached out and closed his hand over the barrel of the gun and the blue steel crumpled like wet paper.

From across the street, someone was shooting at him with a rifle. Several times a bullet smacked warmly against his head or his back.

He continued walking slowly up the street. At its far end several men appeared dragging a small howitzer—probably the only piece in the local armory. They scurried around it, trying to get it aimed and loaded.

"Fools. Stupid fools," Hall shouted at them.

The men could not seem to get the muzzle of the gun down, and when he was a dozen paces from it they took to their heels. He tore the heavy cannon off of its carriage and with one blow of his fist caved it in. He left it lying in the street broken and useless.

Almost as suddenly as it came, his anger left him. He stopped and looked back at the people cringing in the doorways.

"You poor, cruel fools," Hall said again.

He sat down in the middle of the street on the twisted howitzer barrel and buried his head in his hands. There was nothing else for him to

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do. He knew that in just a matter of seconds, the ships with their permallium nets and snares would be on him.

Since Jordan's ship was not large enough to transport Jon Hall's great weight back to Grismet, the terrestrial government put at the agent's disposal a much heavier vessel, one room of which had been hastily lined with permallium and outfitted as a prison cell. A pilot by the name of Wilkins went with the ship. He was a battered old veteran, given to cigar smoking, clandestine drinking and card playing.

The vessel took off, rose straight through the atmosphere for about forty miles, and then hung, idly circling Earth, awaiting clearance before launching into the pulse drive. A full course between Earth and Grismet had to be plotted and cleared by the technicians at the dispatch center because the mass of the vessel increased so greatly with its pulsating speed that if any two ships passed within a hundred thousand miles of each other, they would at least be torn from their course, and might even be totally destroyed.

Wilkins had proposed a pinochle game, and he and Jordan sat playing in the control room.

The pilot had been winning and he was elated. "Seventy-six dollars so far," he announced after some arithmetic. "The easiest day's pay I made this month."

Jordan shuffled the cards and dealt them out, three at a time. He

was troubled by his own thoughts, and so preoccupied that he scarcely followed the game.

"Spades, again," the pilot commented gleefully. "Well, ain't that too bad for you." He gave his cigar a few chomps and played a card.

Jordan had been looking out of the window. The ship had tilted and he could see without rising the rim of Earth forming a beautiful geometric arc, hazy and blue in its shimmering atmosphere.

"Come on, play," the pilot said, impatiently. "I just led an ace."

Jordan put down his cards. "I guess I better quit," he said.

"What the devil!" the pilot said angrily. "You can't quit like that in the middle of a deal. I got a flush and aces."

"I'm sorry," Jordan said, "but I'm going to lie down in my cabin until we are given clearance."

He opened the door of the little room and went into the hall. He walked down past his own cabin and stopped in front of another door, a new one that was sheathed in permallium. He hesitated a few moments; then he snapped open the outside latch and walked in, letting the door swing closed behind him.

Hall lay unmoving in the middle of the floor, his legs and arms fastened in greaves of permallium.

Jordan was embarrassed. He did not look directly at the robot.

"I don't know whether you want to talk to me or not," he started. "If you don't want to, that's all

right. But, I've followed you since you landed on Earth, and I don't understand why you did what you did. You don't have to tell me, but I wish you would. It would make me feel better."

The robot shrugged—a very human gesture, Jordan noted.

"G-go ahead and ask me," he said. "It d-doesn't make any difference now."

Jordan sat down on the floor. "The boy was the one who gave you away. If not for him, no one would have ever known what planet you were on. Why did you let the kid get away?"

The robot looked straight at the agent. "Would you kill a child?" he asked.

"No, of course not," Jordan said a little bit annoyed, "but I'm not a robot either." He waited for a further explanation, but when he saw none was coming, he said: "I don't know what you were trying to do in that powerhouse at Ballarat, but, whatever it was, that old man couldn't have stopped you. What happened?"

"I l-lost my head," the robot said quietly. "The alarm and the lights rattled me, and I got into a p-panic."

"I see," said Jordan, frustrated, not really seeing at all. He sat back and thought for a moment. "Let me put it this way. Why do you stutter?"

Hall smiled a wry smile. "Th-that used to be a m-military secret," he said. "It's our one weakness—the one Achilles heel in a m-machine

that was meant to be invulnerable."

He struggled to a sitting position. "You see, we were m-made as s-soldiers and had to have a certain loyalty to the country that m-made us. Only living things are loyal—machines are not. We had to think like human beings."

Jordan's brows contracted as he tried to understand the robot.

"You mean you have a transplanted human brain?" he asked incredulously.

"In a way," Hall said. "Our b-brains are permallium strips on which the mind of some human donor was m-magnetically imprinted. My mind was copied f-from a man who stuttered and who got panicky when the going got rough, and who couldn't kill a child no matter what was at s-stake."

Jordan felt physically ill. Hall was human and he was immortal. And according to galactic decree, he, like his fellows, was to be manacled in permallium and fixed in a great block of cement, and that block was to be dropped into the deep silent depths of the Grismet ocean, to be slowly covered by the blue sediment that gradually filters down through the miles of ocean water to stay immobile and blind for countless millions of years.

Jordan arose to his feet. He could think of nothing further to say.

He stopped, however, with the door half open, and asked: "One more question—what did you want with the electrical generator plants on Earth?"



Slowly and without emotion Hall told him, and when he understood, he became even sicker.

He went across to his cabin and stood for a while looking out the window. Then he lit a cigarette and lay down on his bunk thinking. After a time, he put out the cigarette and walked into the hall where he paced up and down.

As he passed the cell door for about the tenth time, he suddenly swung around and lifted the latch and entered. He went over to the robot, and with a key that he took from his pocket, he unlocked the greaves and chains.

"There's no point in keeping you bound up like this," he said. "I don't think you're very dangerous." He put the key back in his pocket.

"I suppose you know that this ship runs on an atomic pile," he said in a conversational tone of voice. "The cables are just under the floor in the control room and they can be reached through a little trap door."

Jordan looked directly into Hall's face. The robot was listening with great intentness.

"Well," the agent said, "we'll probably be leaving Earth's atmosphere in about fifteen minutes. I think I'll go play pinochle with the pilot."

He carefully left the door of the cell unlatched as he left. He walked to the control room and found Wilkins, a dry cigar butt clenched between his teeth, absorbed in a magazine.

"Let's have another game," Jordan

said. "I want some of that seventy-six dollars back."

Wilkins shook his head. "I'm in the middle of a good story here. Real sexy. I'll play you after we take off."

"Nothing doing," Jordan said sharply. "Let's play right now."

Wilkins kept reading. "We got an eighteen-hour flight in front of us. You have lots of time."

The agent snatched the magazine out of his hands. "We're going to play right now in my cabin," he said.

"You quit when I have aces and a flush, and now you come back and want to play again. That's not sportsmanlike," Wilkins complained, but he allowed himself to be led back to Jordan's cabin. "I never saw anybody so upset about losing a miserable seventy-six bucks," was his final comment.

The robot lay perfectly still until he heard the door to Jordan's cabin slam shut, and then he arose as quietly as he could and stole out into the hall. The steel of the hall floor groaned, but bore his weight, and carefully, trembling with excitement inside of his ponderous metallic body, he made his way to the control room. He knelt and lifted the little trap door and found the naked power cable, pulsating with electrical current.

In a locker under the panel board he found a length of copper wire. It was all he needed for the necessary connection.

Since his capture, his fellows on Grismet had been silent with despair, but as he knelt to close the circuit, their minds flooded in on him and he realized with a tremendous horror that there were now nineteen, that all except he had been bound and fixed in their eternal cement prisons.

"We are going to have our chance," he told them. "We won't have much time, but we will have our chance."

He closed the circuit and a tremendous tide of electric power flowed into his head. Inside that two-inch shell of permallium was a small strip of metal tape on whose electrons and atoms were written the borrowed mind of a man. Connected to the tape was a minute instrument for receiving and sending electromagnetic impulses—the chain by which the mind of one robot was tied to that of another.

The current surged in and the tiny impulses swelled in strength and poured out through the hull of the ship in a great cone that penetrated Earth's atmosphere in a quadrant that extended from Baffin land to Omaha, and from Hawaii to Labrador. The waves swept through skin and bone and entered the sluggish gelatinous brain of sentient beings, setting up in those organs the same thoughts and pictures that played among the electrons of the permallium strip that constituted Jon Hall's mind.

All nineteen clamored to be heard, for Hall to relay their voices to

Earth, but he held them off and first he told his story.

The Casseiopeian delegate to the Galactic Senate was at the moment finishing his breakfast. He was small and furry, not unlike a very large squirrel, and he sat perched on a high chair eating salted roast almonds of which he was very fond.

Suddenly a voice started talking inside of his head, just as it did at that very second inside the heads of thirteen billion other inhabitants of the northwest corner of Earth. The Casseiopeian delegate was so startled that he dropped the dish of almonds, his mouth popping open, his tiny red tongue inside flickering nervously. He listened spellbound.

The voice told him of the war on Grismet and of the permallium constructed robots, and of the cement blocks. This, however, he already knew, because he had been one of the delegates to the Peace Conference who had decided to dispose of the robots. The voice, however, also told him things he did not know, such as the inability of the robots to commit any crime that any other sane human being would not commit, of their very simple desire to be allowed to live in peace, and most of all of their utter horror for the fate a civilized galaxy had decreed for them.

When the voice stopped, the Casseiopeian delegate was a greatly shaken little being.

Back on the ship, Hall opened

the circuit to the nineteen, and they spoke in words, in memory pictures and in sensations.

A copter cab driver was hurrying with his fare from Manhattan to Oyster Bay. Suddenly, in his mind, he became a permallium robot. He was bound with cables of the heavy metal, and was suspended upside down in a huge cement block. The stone pressed firmly on his eyes, his ears, and his chest. He was completely immobile, and worst of all, he knew that above his head for six miles lay the great Grismet Ocean, with the blue mud slowly settling down encasing the cement in a stony stratum that would last till the planet broke apart.

The cab driver gasped: "What the hell." His throat was so dry he could scarcely talk. He turned around to his fare, and the passenger, a young man, was pale and trembling.

"You seeing things, too?" the driver asked.

"I sure am," the fare said unsteadily. "What a thing to do."

For fifteen minutes, over the northwest quadrant of Earth, the words and the pictures went out, and thirteen billion people knew suddenly what lay in the hearts and minds of nineteen robots.

A housewife in San Rafael was at the moment in a butcher shop buying meat for her family. As the thoughts and images started pouring into her mind, she remained stock-

still, her package of meat forgotten on the counter. The butcher, wiping his bloodied hands on his apron froze in that position, an expression of horror and incredulity on his face.

When the thoughts stopped coming in, the butcher was the first to come out of the trancelike state.

"Boy," he said, "that's sure some way of sending messages. Sure beats the teledepths."

The housewife snatched her meat off the counter. "Is that all you think of," she demanded angrily.

"That's a terrible thing that those barbarians on Grismet are doing to those . . . those people. Why didn't they tell us that they were human." She stalked out of the shop, not certain what she would do, but determined to do something.

In the ship Hall reluctantly broke off the connection and replaced the trap door. Then he went back to his cell and locked himself in. He had accomplished his mission; its results now lay in the opinions of men.

Jordan left the ship immediately on landing, and took a copter over to the agency building. His conversation with his superior was something he wanted to get over with as soon as possible.

The young woman at the secretary's desk looked at him coldly and led him directly into the inner office. The chief was standing up in front of the map of the galaxy, his hands in his pockets, his eyes an icy blue.

"I've been hearing about you," he said without a greeting.

Jordan sat down. He was tense and jumpy but tried not to show it. "I suppose you have," he said, adding, after a moment, "Sir."

"How did that robot manage to break out of his cell and get to the power source on the ship in the first place?"

"He didn't break out," Jordan said slowly. "I let him out."

"I see," the chief said, nodding. "You let him out. I see. No doubt you had your reasons."

"Yes, I did. Look—" Jordan wanted to explain, but he could not find the words. It would have been different if the robots' messages had reached Grismet; he would not have had to justify himself then. But they had not, and he could not find a way to tell this cold old man of what he had learned about the robots and their unity with men. "I did it because it was the only decent thing to do."

"I see," the chief said. "You did it because you have a heart." He leaned suddenly forward, both hands on his desk. "It's good for a man to have a heart and be compassionate. He's not worth anything if he isn't. But"—and he shook his finger at Jordan as he spoke—"that man is going to be compassionate at his own expense, not at the expense of the agency. Do you understand that?"

"I certainly do," Jordan answered, "but you have me wrong if you think I'm here to make excuses or to apologize. Now, if you will get on

with my firing, sir, I'll go home and have my supper."

The chief looked at him for a long minute. "Don't you care about your position in the agency?" he asked quietly.

"Sure I do," Jordan said almost roughly. "It's the work I wanted to do all my life. But, as you said, what I did, I did at my own expense. Look, sir, I don't like this any better than you do. Why don't you fire me and let me go home? Your prisoner's safely locked up in the ship."

For answer the chief tossed him a stellogram. Jordan glanced at the first few words and saw that it was from Galactic Headquarters on Earth. He put it back on the desk without reading it through.

"I know that I must have kicked up a fuss. You don't have to spell it out for me."

"Read it," the chief said impatiently.

Jordan took back the stellogram and examined it. It read.

To: Captain Lawrence Macrae
Detection Agency, Grismet.

From: Prantal Aminopter in
Delegate from Casseiopeia
Chairman, Grismet Peace
Committee of the Galactic
Senate.

Message: You are hereby notified that the committee by a vote of 17-0 has decided to rescind its order of January 18, 2214, directing the disposal of the permallium robots of Grismet. Instead, the committee directs that

you remove from their confinement all the robots and put them in some safe place where they will be afforded reasonable and humane treatment.

The committee will arrive in Grismet some time during the next month to decide on permanent disposition.

Jordan's heart swelled as he read the gram. "It worked," he said. "They have changed their minds. It won't be so bad being discharged now." He put the paper back on the desk and arose to go.

The chief smiled and it was like sunlight suddenly flooding over an arctic glacier. "Discharged? Now who's discharging you? I'd sooner do without my right arm."

He reached in a desk drawer and pulled out a bottle of old Earth bourbon and two glasses. He carefully poured out a shot into each glass, and handed one to Jordan.

"I like a man with a heart, and if you get away with it, why then you get away with it. And that's just what you've done."

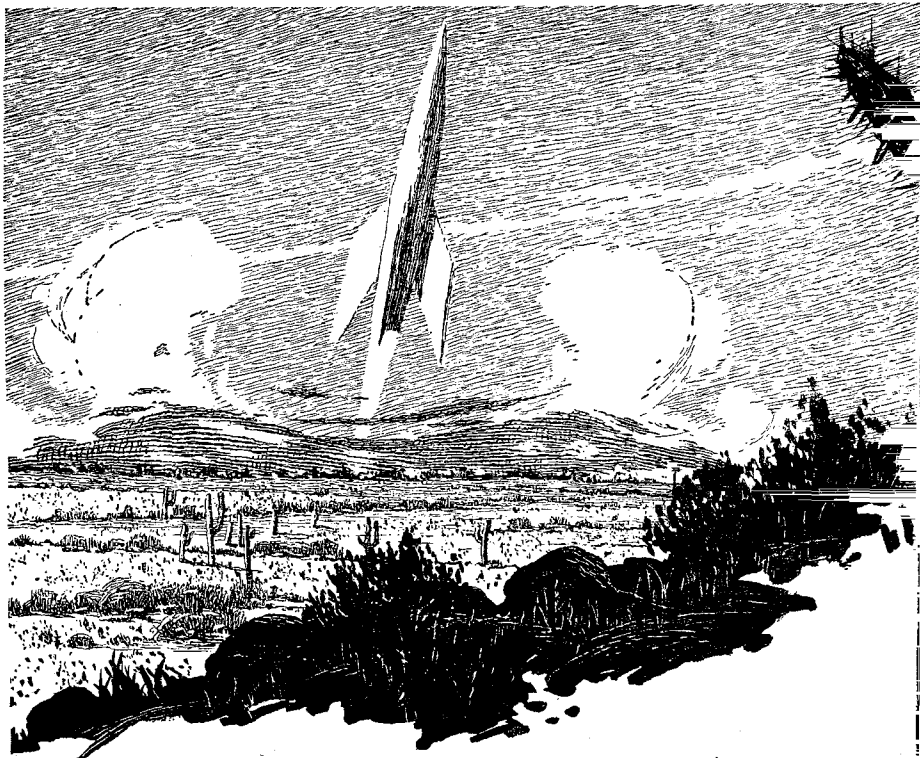
He sat down and started sipping his whisky. Jordan stood uncertainly above him, his glass in his hand.

"Sit down, son," the old man said. "Sit down and tell me about your adventures on Earth."

Jordan sat down, put his feet on the desk and took a sizable swallow of his whisky.

"Well, Larry," he started, "I got into Earth atmosphere about 2:40 o'clock—"

THE END



THE PLAINS OF SAN AUGUSTINE

If you've mislanded one hundred fifty feet of multi-million-dollar spaceship too many miles from anywhere—how do you get it off again? White Sands uses mighty complex facilities to service a rocket ship; is it cheaper to build a rocket base, or a new ship. . . ?

Illustrated by van Dongen

BY LEE CORREY



"Stand by to cut!"

The flame jutting from the stern of the spaceship licked at the desert sand as Pete Gilbert looked aft from the control blister.

"Easy! Easy! Chop it! *Cut!*"

Stan Hamilton jabbed at the red switch on his pilot's panel, and there was a moment of sickening falling. With a spine-cracking crunch, the ship settled to the ground, rocked twice, and steadied.

There was dead silence in the cabin for long seconds, then Stan let out, "*Whew!* Made it! You owe me that million bucks, Pete." He pushed his microphone switch. "Hello, White Sands Spaceport, this is the *Pendray*. We are safely on the ground somewhere to the west of you. Over."

An impersonal voice replied through his headphones, "Roger, *Pendray*. Our radars have located you

on the Plains of San Augustine. A helicopter survey party will be on its way shortly. White Sands clear."

As Stan turned things off, he snapped to Pete, "I'm going outside to look her over. Drop back into the boat-tail and have a look at the propulsion system, and I'll meet you on the ground." He added as an afterthought, "And watch out for fumes. We may have sprung some leaks in the propellant lines."

"Shucks, there isn't any propellant left to make fumes," Pete grunted, looking at the gauges. "We must have made that last hundred feet running on the sweat inside the tanks."

After scrambling down the precipitous side of the ship on a rope ladder, Stan reached the ground and looked around. The country was as flat as a griddle for miles and miles and rimmed except to the north by mountains and low hills. There was little vegetation, just sand. And the heat beat against him like flames from a huge furnace.

He walked a few paces away from the stern, sat down, and looked disconsolately up at the gleaming sides of the one-hundred-fifty-foot, multi-million-dollar spaceship *Pendray*.

It hadn't been much of a slip, just a few errors in the ship's radar tracking circuits. But it had left the *Pendray* high, dry, and in perfect condition miles away from any road squarely in the middle of a flat. New Mexico desert basin known as the Plains of San Augustine.

Pete emerged from a hatch in the

stern and clambered to the ground. As he approached through the sand, he called out, "She's practically ready to fly again!" He joined Stan in the shade of the swallow-like wings and dug a cigarette out of his coverall pocket.

"Great," Stan observed wryly, "except for the fact we missed White Sands Spaceport by a mere hundred miles or so. The big question is: How do we get the *Penny* out of here?"

That *was* a problem, and Pete admittedly said so. One-hundred-fifty-foot spaceships are meant to land where there are facilities—gantry cranes, hoists, electric power, propellant storage, high-pressure supplies, repair crews, inspection technicians, and all the myriad other technical features that make a spaceport. Exploration ships are designed to land and take off without a spaceport, but not the regular shuttles between White Sands and the space station.

First, of course, the *Pendray* had to have propellants for the rocket engines, and the problem of transporting thousands upon thousands of gallons of toxic and volatile rocket propellants across the New Mexico desert to the ship was staggering in its scope. The country wasn't the kind you could just walk over. But even if propellants were on hand, there was the matter of getting them into the ship, a feat requiring powerful pumps and kilowatts of electric power to operate them. Routine checkouts and maintenance of the delicate equipment aboard had to be made; this called for scores of specialists

and hundreds of extremely accurate test instruments. In turn, the instruments would require protection from the elements, and the men would need water and food.

"So what do we do now?" Pete wanted to know.

"We sit and wait for the 'copters," Stan told him. "Then we see if we can't make some arrangements to fly the *Penny* out of here."

"That's an impossible job, Stan."

"I am the commander of this ship," Stan stated slowly and with emphasis. "I will not abandon my ship. I'm going to fly her out if I can."

Pete kept silent, and they both sat there quietly, trying to keep the ants off and watching the sky and the ground. It was unlikely that rattlers would be out on a hot summer day like this, but there were also the scorpions to worry about.

Stan was getting thirsty. The heat was almost too much for him and was made worse by the knowledge that he and Pete were stranded until help arrived. On top of this, he thought, there was that date in El Paso tonight. Well, too bad, but business before pleasure.

"Hey!" Pete shouted, breaking his reverie. "Someone coming over there!"

Far off through the shimmering heat waves, he made out a car crawling toward the ship. It took five minutes for the vehicle to get close enough for him to make it out as an ancient, battered pick-up truck. It

pulled up to the base of the towering ship and skidded to a stop. An arm reached out of the window and unwound a scrap of wire holding the door closed. Then a heavy-set man attired in dirty, tight-fitting Levis, dusty high-heeled boots, and a disreputable Stetson climbed out. He reared back to look at the mass of the spaceship, then turned toward the two men. "Stranded, huh?"

"Emergency landing," Stan explained. "You live around here?"

"You might say that. This here's my land. Cortinez is the name . . . Luke Cortinez." He stuck out a big, rough hand. "Got a ranchhouse over in them foothills. Saw you comin' down outta the sky and figgered you missed White Sands. Scared the hell outta us; you hombres sure make a racket!"

The two men introduced themselves, and Stan looked the rancher over. His face was weatherbeaten and lined, with little blue eyes peering out from behind lids which ended in crow's tracks. The only evidence of his Latin extraction was the slightly dark complexion of his face and hands, and the aquiline bridge of his nose. He looked well-fed—and hard as nails.

"Got any water?" Pete asked.

"Sure thing!" Cortinez turned and shouted toward the truck, "*Rosie!* Come on out and bring the canteen!" He explained to the men, "Rosie's my kid. She's down for the summer from Albuquerque."

Rosie came around the front of the pickup, and Stan saw she was no kid

—not the way those tight Levis fitted! Her Latin extraction was more pronounced, being evident in the fine, simple lines of her face and in her long, black hair.

As she stood beside her father, Stan could see she was no ordinary ranch girl; her face was pretty, not beautiful, and had personality, while her dark eyes betrayed intelligence.

Cortinez introduced them, and Rosie replied with a warm, bouyant, "Hello, there. I'm awfully glad you landed here on our ranch instead of over in those mountains." There was something different about her voice, too. Stan could not detect any trace of the local accent.

The water tasted good. Stan took only a mouthful, although he could have downed the whole canteen without trouble. Then they stood and talked in the shade of the ship. Although ranching was difficult, they learned that Cortinez managed to do fairly well because he had good stock. But he wasn't interested in talking about himself.

"I seen you guys go over in your rocket ships all the time, but I never seen one close-up like this. I never thought they was this big. Say, how you gonna get her out of here?"

"We'll fly her out," Stan explained.

"You got a job on your hands," the rancher advised them, looking up at the silver hull. "Boy, she *is* big! I remember once when my old man took me into Las Cruces for a parade when I was a kid, and I saw one of

them V-2 rockets . . . and I thought *they* was big! But this thing must be bigger'n an ocean liner!"

Stan noticed that Rosie hadn't said much. Perhaps she was naturally shy, although he doubted it; he felt as though she were studying Pete and himself. It made him feel like a side of beef in a butcher store.

Cortinez went on asking them questions about space flight, and finally remarked, "Rosie'll probably talk your leg off while you're here. She's only got another year to go before she can claim to be a real plant chemist."

"Oh?" Stan broke in. "What particular field of plant chemistry, Rosie?"

"Extraterrestrial," she replied nonchalantly.

"Huh?"

"She says she wants to study life on Mars," Cortinez went on with a grin. "Goin' off and leave her old man to run the spread. I can't convince her that the experts say Mars is a lot worse than this here country. By the way, you guys wouldn't happen to have a pickled Martian inside that ship for her to study, would you?" He was kidding, but it was evident that Rosie was used to it.

"Hardly," Stan replied stiffly. "We've yet to land on Mars."

"One of these days," Rosie said, "I'm going to convince somebody that I'm not crazy for wanting to do it—"

"'Copter!" Pete announced, pointing toward the sky.

But it wasn't a White Sands' 'cop-

ter. It was filled with newspapermen who barged up to the ship. One of them took charge at once. "Al, get some close-ups of the men, then tear out there about a half-mile and get a shot of the ship! You guys the crew? Where's the skipper?" Then he noticed Cortinez and Rosie and did a double-take. "Hey, this is getting better! 'Rancher and daughter succor stranded spacemen!' Al, come over here and get a shot of the bunch with the canteen standing next to the ship!"

"Hold it!" Stan barked. "No statements, no pictures! The first guy who goes inside that ship gets separated from a few teeth! Understand?"

The reporter surveyed him. "Maybe . . . maybe. You're the skipper, huh? This is the first time this has happened, isn't it?"

"No statements," Stan replied.

About that time, a squadron of 'copters bearing the words, "White Sands Spaceport," descended from the sky and disgorged quantities of photographers, several engineers, and a group of technicians. The next few minutes were confused. The reporters were run off to a suitable distance, and Stan and Pete were questioned endlessly. A few of the engineers poked around, scratching their heads.

The question was finally broached by Hugh Fergusen, head of the White Sands' engineering staff, "Well, how do we go about getting her out of here, Colonel?"

Colonel Hardin, the operations chief, pushed his hat back on his head and looked at the *Pendray*. "I'm damned if I know," he admitted.

Someone suggested, "Strip it and let it rot here."

"We're short of ships," the colonel replied quietly. "We've got to get her back."

"Dismantle her," a Navy commander suggested. "We'll never get propellants into her out here, much less get her checked out and off the ground."

"That's an idea," Ferguson mused. "Got to have hoists and cranes to do the job, though—and trucks. How are the roads?" he asked Cortinez.

"They ain't exactly what you might call roads," the rancher answered, ducking his head to light a cigarette. He blew smoke and pointed north. "Highway 60's about forty miles that way. Horse Springs lies fifteen-twenty miles over there. There ain't no roads out this way except what you make yourself."

Ferguson scratched his head and looked perplexed.

"Well, gentlemen, let us decide what we are going to do," Hardin put in. "Hamilton, you've probably studied the situation while you were waiting for us. Have you got any ideas?"

"Yes, sir. To dismantle her, we'll have to build roads and bring in men and equipment. As long as we're going that far, we may as well bring in propellants, get her checked out, and fly her home to White Sands."

"Stan!" Pete exploded. "You've

been out in the sun too long without a hat! You're asking for a temporary spacecraft—out *here!*"

"That's right," Stan replied coolly. "We truck in heavy equipment and fly in the rest. We pull in a couple generators and get power. We move in men and tents. It's an engineering job; it can be licked. And Pete and I can fly her out; don't worry!"

Hardin thought about this for a moment. "You may have the answer. How about it, Hugh?"

The engineer gazed dismally around the barren wasteland, then brightened and replied, "I think we can do it—if we can get backing from Washington. It'll cost about a million bucks, but that's chicken-feed compared to the value of this ship."

"You let me worry about Washington," the colonel rapped. "How long will it take?"

"About three weeks from the time we start on the road."

"O.K., you're in charge. Better have a supervisor at this end. Hamilton should be able to handle that."

"I'd be glad to," Stan put in.

"I'll buy it," was Ferguson's remark.

"Good! Hamilton, we'll get back and get things rolling. Until the *Pendray* sits down at White Sands and you log out, I will consider you her commanding officer. We'll get the stuff to you; you get her out of here."

Shortly before sundown, Cortinez and his daughter showed up in their battered pickup with the truck bed filled with food. "If your pals at

White Sands ain't made provisions to feed you yet," Cortinez boomed, "we ain't gonna let you starve. We don't treat guests that way."

It wasn't a banquet, but it was licking good and there was plenty of it. Steaks from a freshly-butchered steer, French-fried potatoes, hot biscuits by the dozens, and frijoles washed down with black coffee poured from a huge pot made up the menu. They sat down under the gaping rocket nozzles of the *Pendray* with a half-dozen gasoline lanterns hung from the ship's boat-tail to provide light.

Stan found a place next to Rosie and sat down. They ate without speaking until Stan finally wiped his lips on the sleeve of his coveralls and remarked, "Thanks, Rosie; that was good, but you'll go broke if you keep on feeding this bunch of chow-hounds." He indicated Pete and the remainder of the group from White Sands sitting around.

"You won't go hungry," she promised him, "and this is nothing compared to feeding a bunch of cow hands."

"Who do we thank for this cooking? Your mother—?"

She turned to look at him and raised her eyebrows. "Mrs. Timberly, our housekeeper, has her hands full with the rest of the hands at the ranch; this was *my* job, Captain Hamilton. I can—and have—cooked for fifty men at a time, most of them with bottomless stomachs and hollow legs."

"Then your mother's—"

"Years ago. It was before I can remember."

"I'm terribly sorry. I didn't know."

"I didn't expect you to, captain. You're not the first one who thought I was merely decoration around the place."

"Oh, come now! You cook like this, and they call you decoration?" Stan said in amazement.

"The young bucks hereabouts," she explained, her chin on her knees and her hands clasped around her ankles, "believe in the old Indian saying: 'Men do men's work, women do women's work.' Cook and raise kids. Well, maybe some day, but not for a while."

"What are you going to do when you get your degree?" He was enjoying conversation with her. There was something out of the ordinary behind that pretty face, and it was a real change for him.

"Who knows?" She shrugged her shoulders. "Somebody wants a plant chemist. I won't be coming back to the ranch. You see, one of these days you rocket men will land on Mars, and I want to be handy. You'll need plant chemists then, captain."

"Call me Stan; I dislike titles," he told her. "You're certainly dedicated to your cause, Rosie. What will be so different about the lichens on Mars?"

"How do you know they *are* lichens? How do you know life is the same everywhere? That's why I'd like to study the evolution of a different planet. It may change our whole outlook by giving us a new concept

of the structure and meaning of life. That's why I want to study Extraterrestrial life, Stan; there's *so much* to learn."

"True—I'd never thought of it that way, Rosie," he admitted. "By the way, does that stand for Rose?"

"No—Rosita Anita Euphemia Camerón de Cortinez."

"Wow! No wonder they call you Rosie!"

"It's been three generations since the Cameron and Cortinez families intermarried," she explained. "We've kept the names. They go with this country. Where are you from, Stan?"

"Me? Chicago . . . big city, stinking city . . . people all over the place. My dad was with the city engineer, but I got out of the town. Spent four years at the Air Academy in Colorado; applied for space, and got it, and . . . here I am, years older, still not rich, and still not famous."

"But you must be competent; you're the skipper of a spaceship," Rosie pointed out.

"That's my job; that's all I've got."

It was dark now around the *Pendray*. The Plains of San Augustine lay bathed in the light of a full moon hanging over the Black Range to the southeast. Stan glanced at his watch; he was now scheduled to pick up his date in El Paso, but he dismissed the thought. Just sitting out here on the desert under the rocket nozzles of the old *Penny* was more satisfying than a night of pub-crawling in Juarez. It might not have been without Rosie.

Without a doubt, the launching of the spaceship *Pendray* from the Plains of San Augustine was going to be one of the biggest engineering jobs tackled since the construction of the Narrows Bridge. It was a situation comparable to having the *Queen Mary* or the SS *Eisenhower* stranded in the same spot. Such a thing would provide news interest and television programs without number during the usually lax summer period.

The next day, bulldozers began pushing through a road from Horse Springs. In the meantime, helicopters brought in men, tents, test equipment, sections of light gantry crane, and anything that could be lifted by the whirling blades. In four days, a black-top road had reached the *Pendray*, and trucks began to show up. Technicians and mechanics, cursing the dumb pilot who made them come all the way out here to service his ship, swarmed over the *Pendray*. A small town grew up around the ship while the roar of gas-turbine electric generators filled the desert day and night.

Stan had his hands full supervising the job. He had to detail a group of men to handle the television and news services and give out a statement of progress each evening. TV carried direct pickups of the activity in the middle of the New Mexico desert. Tourists and casual on-lookers tried to get in to the site, and guards had to be posted to keep the roads clear for the trucks which brought in supplies.

Within two weeks, the Plains of San Augustine looked like the little brother of White Sands across the mountains. But the bustling activity was lost amidst the vastness of the basin. Only at night did the desert really come alive with sparkling lights, the floodlit silver needle of the *Pendray* looming high above all.

It was not a simple job to check out the *Pendray* for flight. A spaceship is a complex mechanism with hundreds of interacting systems which must work perfectly. On more than one occasion, Stan and Pete had to be satisfied with inadequate, incomplete, or improvised methods. No amount of portable equipment could match the magnificent, accurate, complete—and bulky—checkout devices in the hangars, labs, and launching pads of White Sands. To Stan, it meant taking the awful chance of losing his ship if something went wrong—or having to leave it there. He drove on with only one apparent purpose: to get the *Pendray* back into space. There was no doubt in his mind but what it could be done; it was only a matter of when.

His schedule was interrupted finally by an invitation to supper at the Cortinez ranch. Taking a jeep, he and Pete drove over to the ranch-house in the foothills of the mountains. The country there was in direct contrast to that where the ship was; low junipers and pinon pines dotted the rolling red hills, and a sparkling stream dashed by only to lose itself on the desert miles away. The house

itself was very old, but its adobe walls were in perfect condition. The sheds and corrals were of the same vintage, but showed care and upkeep; a green lawn grew before the house. It was nothing fancy; it looked—comfortable, Stan decided.

Cortinez greeted them as they drove up, and was attired for a change in clean Levis, a flashy pair of boots, a spotless white shirt, and a black string tie. "Come on in, boys! Been waiting for you!"

Relaxing in the decor of Spanish architecture, they accepted a drink which the rancher poured for them. Mrs. Timberly turned out to be a plump, gray-haired old lady who undoubtedly ruled the Cortinez household with the proverbial mailed fist. "You gentlemen sit down. I've got to wait supper for Gabe and George. They went down to get a yearling out of the wire."

"Sure, we'll wait," Cortinez said. "Rosie ain't ready anyhow. Been back in her room for the past hour gettin' ready. Acts like she mighta taken to you boys. Hah!" he guffawed, then turned to his favorite subject of late. "I ain't never seen so much goin' on as down on the flats lately. You guys sure baby them ships! Ain't no machine should have to be babied like that, no, sir! Take my truck; put gas and oil in her and lube her every time I'm in town, and she runs like a rabbit. What's the matter with you boys? Can't you design your rocket ships like that?"

"Some day," Pete told him, "when they've built as many spaceships as



cars. Considering everything, the *Penny's* just a Model-T."

"Biggest Model-T I ever saw!"

"Sure, and lots more to go wrong with it," Stan explained. "Would you ride in it without knowing that everything's going to work?"

The rancher replied with a grin, "I wouldn't ride it in the first place! When you boys gonna get it off the range?"

"A couple days or so," Pete told him, lost in the expanse of a big leather chair and enjoying it immensely. "Depends on how the final

checks go. Are we in your way down there?"

"Shucks, no! Somebody could run off with a couple thousand acres, and I wouldn't miss it for three months. But be sure and lemme know when you're gonna leave, willya? I ain't never seen a rocket ship fly, and I ain't gonna miss this chance!"

"Sure. You can have a front-row seat," Stan promised him, "after all the cooperation you've given us."

"You guys don't owe me nothin'," Cortinez said frankly. "You built me a hard-top road in here, remember?"

"Hello, Stan. Good evening, Pete." Rosie's voice suddenly fell on them. Stan looked up, then got to his feet. He had never seen Rosie before except in her Levis. Now she wore a bright yellow squaw dress, and she had on make-up for the first time Stan could recall.

He stood there looking at her for a moment before he remarked with a smile, "You know, Rosie, it's a shame that someone like you has to waste that out in the middle of this desert."

"I don't consider it wasted," she replied. "Besides, you'll learn this country's full of surprises."

Late evening found Rosie and Stan on the long verandah overlooking the basin. Cortinez had taken Pete down to the sheds in search of "something the boys make from cactus juice which ain't got no federal stamp on the bottle." They sat watching the thousand lights across the valley around the *Pendray*. It was a cool, quiet evening such as often comes in New Mexico after the heat of the day passes. There was no moon; stars were spattered across the sky like sand on a black blanket. Stan noticed them and remarked, "There's only one place where I've seen more stars: outside the atmosphere. You'd never think there could be as many stars."

"Some day I want to see it," Rosie said quietly. "I always knew it was something beautiful and worth-while, but all my information and experience has been secondhand. You've actually done it, and knowing you

has helped me prove one of my personal theories."

"About what?"

"About space flight. Most people see it as merely our desire to explore and satisfy our curiosity. As a woman and as a biologist, I see it a little differently: it's something we *have* to do."

This took Stan aback. "*Have* to do? Why?"

"Why did animal life come up out of the ocean? Go back and ask that first fish that threw itself ashore and foundered around on the tidal flats. He couldn't give you a good reason. He just *had* to come out of the water and live there, and his problems living on the land make our space flight problems look simple. He came out of the ocean for the same reason we went into space. It's not free will. Call it evolution if you want, but it's something we don't understand."

Stan shook his head slowly, a smile on his face. "Watch what happens to your theory in a few days after you've watched the *Penny* take off. If you think about it, watch the faces of the men. But more important, see it and feel it yourself. It's a tremendous experience, a sensation of unlimited force and power—enough to break free of this world. It does things to you. It's very similar to the strange fascination men found in the sea, the railway engine, and flight in the air. We don't *have* to do it; we *want* to do it."

"You love your job, don't you, Ham?"

"If that's a nickname, I won't ob-

ject," he remarked. "Sure, I love my job. I wouldn't do anything else."

"Why?"

"You ask the damndest questions! I've never really thought about it."

"You must have."

"No, when I was a kid and played Space Patrol in the streets with the gang," he admitted, "I knew that when we blasted loose from this world, I'd go along." He paused a moment, then flipped his cigarette out on the lawn and turned to face her. "This is no kind of a conversation to have on a night like this."

"Don't get wise, rocketeer," she advised him in a low voice. "This rancher's daughter hasn't been out in the sticks all her life. Besides, this is a night for talking. Nights like this are the reason I keep coming back to the ranch. I keep running back here to escape time. Away from here, it's always, 'Hurry up, please, it's time; hurry up, please, it's time.' Time stands still here; this country is immune to time. I'll admit I like to run from time occasionally, just as we all run from things. What are you running from, Ham?"

"Me? I'm not running from anything."

"But you are. It sticks out all over you. Your love of space flight isn't desire for conquest; you're trying to escape from something, Ham. Is it loneliness; do you find your kind of people out there, lonely people running from the same thing? What is it?"

"I'm just doing my job," he said quietly and emphatically, "because I

like it, because it's been a dream for centuries, because nothing's spoiled out there yet. Don't go trying to read things into my personality, Rosie, because you really don't know me very well at all."

"I may know you better than you think. You're a lunk-headed engineer with the heart of a poet, a man with ideals who's dissatisfied and is looking for something better. I hope you find it, Ham, because you're a very lonely and disillusioned man."

He got up suddenly and stepped to the porch railing. "Look, just because you're a woman who thinks she's got brains, don't go around trying to impress people with your no-doubt marvelous powers of observation and deduction. When I want to be analyzed, I'll go see the head doctors. And from the way you've been hanging around the ship down there, don't try to tell me you're not lonely out here in the middle of nowhere!"

"I'm sorry. Of course I get lonely. But I haven't been lately. And, if you want to know, I don't think I will be again."

"That's for certain. We're thinking of setting up a permanent emergency spaceport here. You'll have plenty of rocket men to discuss your theories with and to analyze in the light of your discoveries."

"Don't get bitter, Ham. That's going to upset a lot of things around here, and it's going to destroy something I love. But I'm not unhappy because I realize I was running away. When you're willing to face the fact

that you're running, too, you'll be ready to join the rest of the human race—"

"And be ready then to get married and stay on the ground for the rest of my life? No, thanks! I like my work, and I'll never give it up for a ground job—for *anybody*!"

Rosie was silent for a minute. The singing of the *cicadas* and the noise of the creek were the only sounds around the ranchhouse. Finally, she said, "I'm sorry, Stan. I'd hoped earlier that you were a good man on a team instead of the cook and the captain bold and the crew of the captain's gig. I'd thought we could look together. I even had the notion that we might make a good team to land on Mars. But I find I fell for a little girl's fantasy, a childish dream. I guess I wasn't as smart as I thought I was. I guess I'm still a little girl at heart. Good night, Stan."

He started toward the door. "Rosie! Wait a minute! I never knew—" But the door was closed when he got there.

In the early morning light, the long shadows of the men moved with scurrying activity around the base of the *Pendray*. The flimsy gantry had been dismantled, leaving only a hydraulic lift to convey Stan and Pete to the hatch high on the side of the ship. The tent city was gone, and all equipment had been removed to a safe distance. Far off on the flat plain stood radar stations, their parabolic antennas quivering as if in anticipation. Newsmen and television

cameras had been withdrawn many miles away, but telephoto lenses brought the *Pendray* within arm's reach for the television viewer.

The *Pendray* itself dominated the landscape, being much taller than anything for miles and miles.

Near the base of the ship, Colonel Hardin gave last minute instructions to the two pilots. "The radars here will put you in a ballistic trajectory terminating at White Sands. Cut-off will be by radio. If trouble develops, cut it yourself and do your best; just remember that this ship can do a lot of damage if it crashes."

"Check!" Stan acknowledged, pulling on his crash helmet. "We'll pick up the White Sands' radars as soon as we can."

"I wouldn't bet a million bucks on that special ship radar working right," Pete put in caustically.

"You already owe me a million," Stan remarked dryly. "Want to try for two?"

"Minus twenty minutes, boys," Hugh Ferguson reminded them.

"O. K., we're on our way. Where's Cortinez?" Stan asked, checking his gear for the last time.

"He and his daughter are over by the command car," Hardin pointed out. "An unusual request, Hamilton, but considering the coöperation—"

"Rosie came, too?" Stan asked in disbelief. He hadn't approached her since that night, and she hadn't come out to the ship. But he could see her now standing next to her father, and he raised his arm in a gesture of hail and farewell.

Rosie suddenly detached herself from the group and started to run across the intervening ground. Someone yelled after her and tried to stop her, but she came on. Breathless, she ran up to Stan and threw her arms around his neck. "I was a fool; I'm sorry. Come back, Ham. Come back! I need you; I want you—" she whispered in his ear and kissed him soundly.

It was an effort to separate her arms from around him. "Get back where you belong, Rosie!" he told her sharply. "This is no place for you now!"

Colonel Hardin took her arm; his face was stern, but his eyes were kind and there was the slightest suggestion of a smile in the corners of his mouth. "Come along, young lady. I'll accompany you. Good luck, boys!" He stuck out his hand.

In the familiar confines of the *Pendray's* control room, Stan and Pete ran through their last minute pre-lift checks.

"Clear board, Pete?"

"Clear board and green for lift—but I'll bet a million something conks out before lift."

"Nuts! The *Penny's* in fine shape. I'll take you up on that."

"You're on!"

"Minus two minutes!"

There was silence in the compartment for a moment before Pete spoke up. "I don't know how you did it, old boy. I never thought you had it in you, but in three weeks you've got that woman eating out of your hand.

That's what I call proper utilization of time!"

Stan was concentrating on his radar presentations. He rapped back curtly in a toneless voice, "Stand by for lift. Test-Fly to Fly."

"Now, now," Pete soothed, "did the impossible really happen? Did the indomitable Stan Hamilton, the scourge of the spaceways, finally fall for a ground hog? Test-Fly to Fly!"

"Stow it! Minus sixty seconds! Close vents and pressurize!"

"Vent valves closed! Pressurizing!" the co-pilot sang out. "Preparation complete and ready to fire!"

"Minus forty-five!"

"Hold! Starboard power bank out! You owe me a million!"

"We're even! Switch to emergency! Thirty seconds to zero!" He began to feel his ship now, and realized the slim shoestring they were working on. Incomplete checks, hasty refittings, inadequate equipment—they would all begin to show up now unless the ground crew had done an excellent job. The moment of trial was approaching with the sweep of the second hand on the chronometer.

"Twenty seconds to zero!"

What impulse had caused Rosie to run over for that last farewell? Had he been too sharp with her? Most of all, he wondered if she really mattered? Had he been attracted to her just because of her uniqueness or was it something deeper?

"Ten seconds to zero! Nine! Eight! Seven! Six!" Pete chanted.

"Ignition!"

"Three! Two! Plugs away!"
"Zero! Raise ship!"

To those watching on the Plains of San Augustine, the *Pendray* suddenly belched a cloud of vapor from her stern which was followed by a licking flame which grew in intensity, raising huge clouds of sand which obscured the ship.

Their next sight was that of the *Pendray* rising slowly and majestically out of the cloud with deliberate, awesome dignity, a banner of streaming, white-hot gases laced with shock-diamond patterns flung from her stern. Debris and waste scattered around the desert beneath her were picked up by the holocaust and flung into the air. The rippling, beating, rolling, thunderous sound of her departure was both felt and heard.

Then she was but a pin-point of light, a billowy white wake following her up. The flame suddenly winked out, but the vapor trail continued to grow.

A wave of relief swept over the spectators, both from the success of the take-off and from the comfort of the comparative quiet which returned to the desert.

"*Pendray* to San Augustine Control," Stan spoke into his mike. "How does it look from there?"

"Good shoot so far," Fergusen's voice came back. "Radio cut off on schedule. Program looks good. White Sands radar is tracking you."

Stan was encouraged. It was going according to plan. Carefully, he and

Pete swung the ship slightly so that the tail would be down when they came in for a landing at White Sands—an attitude which would allow Stan to ease the ship to the ground by using the rocket engines as brakes.

But the *Pendray* was still rising on momentum. Over a hundred miles up into the New Mexico sky she soared, and Stan had a chance to look down through one of the ports and see the Earth at close range. Turning his head slightly, he could make out the take-off site; the vapor trail was a white snake pointing toward it. The browns and greens and blacks blended in together, offset by the gleaming white of the cloud banks. Looking through the port, he saw a sight no Earthbound man could ever imagine. The curve of the Earth was plainly visible, and the stars were clear and unwinking against the dead black of space—millions and millions of stars.

He remembered the stars seen at night from the desert floor of the Plains of San Augustine. And there had been that quiet, beautiful night at the Cortinez ranch. He looked back on it now for the first time and saw that it was something he hadn't known existed. There was truly beauty there, and the hand of man had touched it and yet left it unspoiled.

Rosie had been right, and she herself was full of surprises.

He *had* been running from something, and he had found only part of what he was looking for in the dark voids of space. But could it

have been that he had not looked far enough? In his wild drive for space and the possibilities of newer, cleaner, fresher worlds, had he missed much of what was already around him?

A man has his dreams and ideals. For these he fights and searches for their realization. At times, he is disillusioned because he does not see the obvious.

He knew now where to find part of what he wanted, and knew he would not look alone for the remainder. And he suddenly realized everyone of those tiny people down below had the same problem.

Then why had he looked to space for the answer? His job now had a new meaning. It *had* to be done. Three billion years of evolution had finally succeeded in producing a species with the adaptability and intelligence to rise from its planet and spread throughout the universe. There was no answer to the question of why it had to be done; it was just there to do.

Go back and ask that fish why he climbed up on the tidal flats.

"*Pendray*, this is White Sands Control," barked a voice in his earphones. "Your approach is satisfactory. We are standing by to bring you in on automatic control."

"Roger, White Sands." He glanced anxiously over at Pete. "Ready, chum?"

"A snap, boy. It's made in the

shade," the co-pilot replied, engrossed in his panel. "That power plant is all hot to go!"

All the tremendous energy expended by the *Pendray* in climbing to space had to be transferred once again to bring her to rest. It was the final test of the flight.

Three minutes later, the *Pendray* thundered out of the sky and settled gracefully on her jet at White Sands Spaceport.

Stan took his time securing his control panels, but Pete did so immediately and was up and bustling about the control room. "Man, oh man! Am I glad to get back! That experience was one for the books. Got to hand it to you, Stan; I never thought we'd do it as we did, at least not three weeks ago."

Stan sat up and cracked his head on an unfamiliar piece of special gear installed at San Augustine. He swore, fished in his coverall pocket, and tossed two coppery coins to the deck.

Looking at them in pure surprise, Pete asked incredulously, "You're not going back over there, are you?"

Stan merely climbed out of his couch and looked down at the coins.

Pete said knowingly, "I'll bet a million you're hooked for good, boy!"

"I won't take your money," Stan told him, starting aft to the hatch. "Save it and deposit it in the Colonial Bank of Mars when we get out there and set it up." With a grin, he swung the hatch wide, letting in the hot, dry, fragrant air of Mother Earth.

THE END

THE RIGHT TO BREED

BY DONALD KINGSBURY

The Problem of future population is an essential factor of science-fiction extrapolations. Here is an article deliberately written on an Aristotelian yes-or-no basis dealing with population control. You're cordially invited to pick it apart...if you can!

Often the subject of population control has been clawed over bitterly. Brickbat charges of immorality have been tossed by both sides, feelings have been hurt, contempt has been worn with the mask of righteousness. Some people even profess indifference. But it is not a subject for anger, nor a subject for indifference. The structure of a society, the very destiny of man depends upon man's attitude toward breeding.

We see life all about us. We see a mushroom growing fat with spores that will make a flood of other mushrooms spring up on our lawn next week. We see sprouts about the mother tree. We watch affectionately the robin raise her little robins. We stare at the new baby that sleeps in its carriage outside the grocery store while the mother shops.

We are also conscious of death. A storm knocks down an old tree and near it is a dried up little pine that died because of a lack of light. A toad gets squashed in the street. The bones of an owl-devoured mouse lie on the ground.

Life begets life unceasingly so that some of its young may survive. All species which once upon a time had tendencies to under-reproduce have long since become extinct in a grim ecology which ruthlessly attacks life's young. Some men wonder if our race has a place in this ecology. They wonder if we are just another animal who must keep the wombs of our females filled so that our species may survive. Malthus thought so. But then Malthus was unaware of man's fantastic technological abilities and because of this his whole argument becomes invalid.

Certainly we are like the animals. We have so much genetically in common with them. But we are different, too. Are we above the grim ecology of Earth?

Science and technology could be man's answers to the ecological forces.

Animals and plants are kept in check by disease, by being devoured by animals, by starving to death, by being unable to adapt to environmental changes, et cetera. Are we limited by these? Science can conquer disease, science has made the whole animal kingdom fear us, science has an almost unlimited capacity to make edible things out of what was once inedible, science allows us to adapt to almost any climatological or other environmental change, and finally if we ever run out of space to put our offspring science can provide us with space-ships and take our excess population to the boundless planets of space. Superficially it seems that we are above the grim ecology.

I said "superficially" for a reason. It is obvious *qualitatively* that science *can* handle a population increase, however, it is *not* obvious *quantitatively* that science can handle the kind of increase we have come to expect from the human race. Certain people have said that even if science can increase the food supply, it cannot increase it enough and it cannot possibly supply *all* the planets needed, et cetera. In all fairness we are obliged to answer these people or shut up.

Let us look at the subject of population. quantitatively. First, *I'm going to assume that every potential way of supporting an expanding population is available.* This may seem like dirty logic to those who say that science is impotent to handle human breeding, but I justify the assumption on the grounds that if *any* imaginable scientific procedure, no matter how exotic, can support an expanding population we cannot *know* that science has not the potential to allow man to breed with impunity.

Imagine a society in which every possible food source is known and is exploitable. The population not only has efficient agricultural techniques, ways of harvesting the sea, and factories for manufacturing edible gunk, but it can also make cabbages out of rock, et cetera. Ditto for housing, clothing, et cetera. Its production facilities are assumed to be limited only by the law of conservation of mass-energy, which is another way of saying that it is fair to do such astonishing things as making cabbages out of rocks, but no fair hauling cabbages out of the fabric of space.

Imagine also that interstellar travel is possible to this society so that any excess population can be junketed out to some unpopulated planet. To further load the odds against the thesis that science cannot support an expanding population we will assume that the universe is infinite and that in all this infinity man is the only sentient being.

What effect will the fabulous production facilities have? A man will be able to survive in less volume; a population can use the volume assigned to it more efficiently. Now obviously this population compression has a limit. (The population density cannot get much greater than one man per six cubic feet, for instance.) When that stage is reached new food sources, et cetera, are rather unhelpful. That is where space travel fits in since space travel can *increase* the total volume of space available to the population and thus has the potentiality of lowering the population density.

Since space is three-dimensional the volume that can be utilized by a relentlessly colonial minded culture is a *cubic* function of time. This means that, if the population density is a maximum, the population can increase no faster than at a rate proportional to the *square* of the time elapsed. (Only the *surface* of an expanding sphere of mankind is available for colonization.) This may seem like a sterile fact but *it is the executioner of the thesis that space travel can handle man's excess population*. You see, our population increases as an *expotential* function of time.

Now an expotential function is not in the same class as a square function so far as ability to increase is concerned. The square function is a snail. The expotential function is an accelerating rocket. Strange as it may seem, a galactic civilization hell bent on colonization would have a

population tending toward stability; that is, even though the rate of change of population would be increasing, the important *percentage change* in the population from year to year would steadily approach zero. This can be proved with mathematical rigor.*

If the human race does not fall into an extinction-bent decline it tends toward stability—is forced toward stability! Periods of instability must of necessity be rare, very rare. Actually we are in an unstable period now, one so explosively unstable that it may well go down in history as one of the most phenomenal increases of all time. Perhaps an increase of something like 1.2% per year—UN Demographic Yearbook for 1953—does not sound explosive, but it can easily be shown why it is

*Those familiar with calculus will see that the rate of change of any population is given by:

$$\frac{dp}{dt} = p_0 e^{pt} \left[f + t \frac{df}{dt} \right]$$

where p is the population at time t , p_0 the population at time zero, f the frequency of increase in cycles per unit time.

And that:

$$\frac{dP}{dt} = K (t + s)^2$$

where P is the maximum possible population at time t , and p is less than or equal to P . K is a constant composed of the cube of the maximum velocity of the spaceship fleet times the maximum population density times 4π ; s is a time constant.

If dp/dt is greater than dP/dt , the situation is unstable since p soon equals P . Then dp/dt must remain equal to or less than dP/dt , which holds except for rare intervals. Thence f must approach zero, but this means that the population p is stabilizing; i. e., the percentage change in population is dropping from year to year.

and this simple example may also provide a practical demonstration why spaceships would be so hopelessly unable to handle our population surplus.

Suppose Earth's population continues to increase at 1.2% per year. Say it is composed of two and a half billion people today. Then next year it will be composed of $1.012 \times 2.5 \times 10^9$ people, and the year after of $1.012^2 \times 2.5 \times 10^9$ people, et cetera. *Proceeding this way for the ridiculously short period of seven thousand years gives us a population of $1.012^{7000} \times 2.5 \times 10^9$ or 10^{46} individuals, that is, ten billion trillion-trillion-trillion men women and children!* That many people would necessitate the conversion of the *entire known universe*, stars, galaxies, cosmic dust, meteors, planets, spoons, clothes, houses, and all into human bodies, and mighty runty ones at that, nor would an atom of hydrogen be left over. All in seven thousand years! What an explosion! Next time you see the beloved woman of your heart, bow your head in respect; rabbits have nothing on her!

Science has let us down; our women are too much for it. The problem of an expanding population is intrinsically independent of new sources of food, for if a population with the ultimate in food producing methods cannot handle an uncontrolled growth in population, neither can a population with anything less. And any attempt to solve the problem by space travel would be a low-comedy farce.

It is a common fallacy that a society cannot at the same time be both fabulously rich and poverty stricken. It can. To assure this condition of poverty the rich society merely has to support a population as fabulous as its wealth. If a world is rich enough to support twenty-five billion people, its women can always see to it that it must support seventy-five billions. If it can support one hundred billions in luxury, the women can always see to it that it must support three hundred billions, et cetera. A country such as India may triple its food supply and it will still starve. For the scientist who finds new food sources under every bed the equations of population have a sarcastic, "So what?"

An expanding galactic empire of men, for all its mighty ships, would be less able to find place for an increasing population than us puny beings of Twentieth Century Earth! Science-fiction authors should quietly forget that they ever considered the empty planets of space as dumping grounds for surplus people. It won't work. The ship captain of an exploring vessel could never keep up with "the woman in every port."

Now I know that certain people will object to my statement that science "has let us down." They will mention the hushed-up fact that science has invented contraceptives. They will tell us that if the average woman limits herself to two children, the population will no longer increase and thus cannot get ahead

of science. In such a world, they say, science *can* feed our children and provide them with the material benefits which make a rich spiritual life possible.

These birth controllers are for the most part sincere, honest people, and we must give them credit for that, however, they are shockingly naïve concerning the side-effects of their program of control. It is sometimes difficult to discuss these side-effects with them. If one mentions the possible disasters of *world-wide government control*, they have stubborn arguments to show that there would be no disaster. If one mentions the possible psychological damage from such a program, they have stubborn arguments to show that there would be no damage. They know. But there is one side-effect that has no possible answer.

Birth control is a bargain with the devil and the price is racial death. It works this way: The average woman contracts to produce only two or very close to two children, depending upon the number that science can handle at the moment, and science in exchange, with no excess population to worry about, easily contracts to reduce the infant mortality rate to near zero and at the same time to provide the adult population with any material riches it so desires. One goes with the other. Without the first arrangement, as we have seen, you cannot have the second. You have also bought racial death. Read the fine type which happens to concern genetics.

Our genetic structure is an amazing blueprint. Suppose a building contractor threw some plans into a lot and came back a week later to find his building erected due to the fact that the blueprints had gathered together all the construction materials and had assembled themselves into the structure on the plans. Genetic blueprints do that all the time. You were assembled that way and so was I. Our blueprints are complex protein molecules printed on the chromosomes in our cells.

Now these molecules—genes—are not one hundred per cent stable, they tend to “blur.” Some are more stable than others, of course—some “inks” are more “blurproof” than others—and evolution has selected the more stable of these molecules for use, especially in the plans which call for a being with a long generation and a small number of offspring, such as man. Still, they blur. Naturally this changes the plan somewhat and we have a *mutation*. By far the majority of mutations are innocuous—they change the shape of the nose, the height, the skin complexion, et cetera. Of the remaining mutations which cannot be classified as innocuous, most are damaging to the organism. Only the odd few are improvements. Whatever they are, they tend to cause within the species a steady “spread”; i.e., individuals tend to become more and more different. A high infant mortality rate, on the other hand, tends to eliminate the “spread” of an organism toward negative char-

acteristics by killing off the individuals which develop such characteristics before they can breed.

Consider what would happen in the birth controllers' "Utopia." *Because every individual who was born would reach adulthood, every mutation would be propagated.* By the natural forces of chemistry good and medium genes would be gradually converted to negative, useless, or deadly genes, and since most poor quality genes are recessive they would disperse quickly throughout the whole race. The effect would be a cumulative one because birth control plugs up quite tightly the conventional drain by which these defective genes are flushed from the flesh of the species. *A race which accepts birth control accepts progressive physical and mental degeneration.* It kills its own limb on the tree of evolution. It insures its death.

We have been told that birth control is immoral. We have been asked to accept this on faith because it is the word of God. Some of the more ungodly among us, perhaps those who are less intelligent, have denied the word of God and have refused to abide by it. We are like little children in that respect. A child is told not to touch the fire. He is too young to understand. He has to accept the command of his parent on faith. The respectful child suffers no pain; the unrespectful child suffers. Later when a child is more mature he is able to comprehend the command and accepts it in its own right. A

hundred years ago a man had to accept the immorality of birth control on faith but today we are more mature. Because we know genetics, we know why birth control is immoral. We can *prove* that it is immoral.

The ecology of Earth demands a high infant mortality rate of all its species. If man, by the use of birth control, divorces himself from this ecology, he dies as a species, childless; he becomes a dead end and the main line of evolution will not even pass through him. His works, his very reason for being turns to a dust that will sift into oblivion unremembered.

We belong to Earth. We must accept a high infant and adolescent death rate as an essential part of a stable social structure.

There is no population problem, for populations automatically adjust themselves without external control. We will never have to worry about excess population. There is no such thing as an excess population. There can be no such thing as an excess population when external forces, intrinsically beyond control, insure the inevitability of the death of the excess children. Mathematically we can say that the human population will always adjust to a situation where if the average woman who has reached sexual maturity has $(2 + x)$ children, x of them will die before maturity; i.e., if she has three children, one of them will die, if she has eight children, six of them will die, et cetera. There are many ways,

of course, by which their demise may come about. We think immediately of disease, starvation, exposure, and war.

Before discussing and comparing the various types of death, conclusions should be drawn as to what is wanted in a death. Naturally if our children must die we want them to die for valid reasons. This means that their death should contribute something to the race or to evolution. A useful death would, for instance, take very many defective genes with it. Of course, it is a good thing, too, to eliminate indifferent or mediocre genes and so we must also consider as useful a death which would take a number of these with it. A tragic death would be one which removed too many high-quality genes.

This all sounds rather callous and I must, for that reason, say something about the morals of death. Because a man accepts the inevitability of the death of his young, it does not mean in any way that he is callous. Parts of our society, notably the Christian countries, have temporarily been able to lower the infant and adolescent mortality rates to such an extent that they have developed a rather deceptive philosophy which considers mortal life to be sacred. Some of our religions, that should know better, have even accepted this idea to such an extent that they have made atheists of more than a few of their members. Because these religions consider mortal life to be sacred some people cannot understand the death of a young one and so assume

that a God which allows such a thing is cruel and because they cannot believe in a cruel God, refuse to believe in God at all. Mortal life is *not* sacred. The death of the young serves a definite function in the unfolding purpose—the function of draining off defective genetic traits. It is not purposeless to die young.

Because we accept death does not mean that we need to be callous to death. If a man sees a starving child in need of help, it is right and moral that the man should give the child attention and food and love. When the individuals of a species cannot help and love and protect each other, the species has a poor survival potential and is consequently “low” on the evolutionary scale. But suppose the man is himself near death from starvation? He has nothing to give the child and the child dies. Is the man callous? No he is not.

Birth control is immoral but the population **MUST** stabilize because the food can never be manufactured fast enough and the ships cannot open up new land fast enough. No matter how hard we fight for life and fight for the life of our children, the controls of nature automatically adjust themselves to fight back at us just a little harder. But we keep trying; species predisposed to despair have long since become extinct. The fight tempers us by breaking the weak and so we grow stronger. And always come the young whom we must care for and teach and love but whose insatiable voracity demands more

love than we can supply; there is too little food and too little strength in our hands and so there emerges a society that knows disease but must bow to it, that knows agriculture and fishing but must starve, that knows how to build wondrous buildings but must live in hovels, that can spin beautiful cloth but must wear rags, whose people know love and compassion and grief but must fight each other. Nature hammers at us, shaping us for what is to come.

There will be disease in this world, for it is not medical science which prevents death but medical technology. As we produce more and more children, the ratio of colleges to population will decrease thus producing fewer doctors; material and technological resources will be so strained—remember that it is impossible for science to keep up with the birth rate—that hospital equipment and effective medicines will become rarer and eventually the society will reach a stage where effective medical care is not available to the mass of common people. Then the members of the few societies which in this century have been able to arrest disease will again begin to die of disease. We need not fret. It is a useful sort of death since the most desirable type of living organism has no organic malfunctioning and is capable of taking care of disease by itself. When disease kills off certain children an unfortunate predisposition to die of disease is not transmitted to the next generation. Soon we will begin again our forward march

toward a race with better functioning and highly disease-resistant bodies.

There will be starvation in this world. At first this does not seem like a useful death, for certainly we are never going to evolve a human who can get along without food. Famine seems to cut down good and bad specimens alike, but on deeper examination we see that this is not so. In a society which has swollen its ranks beyond the size which science can feed, certain individuals and groups of individuals will be more adept at acquiring food, more able to take punishment and think in a starved condition than less endowed brothers. They and their children will thus have a better chance of surviving a famine and will live to pass on to the next generation whatever of their cunning and stamina was bestowed by genetics.

There will be war in this world. One animal attacks another animal; that is a vital part of the evolutionary system which over the millennia has worked well to produce better life forms. If the individuals of a species are attacked violently and tested to destruction, the best will survive to breed, perhaps battered but alive. It is sound engineering. It is sound genetics.

In the more advanced species we begin to see group-fighting, subtler attacks which require subtler defenses. One individual's interest in and compassion toward another individual becomes important to the survival of the group. Now man has

developed this group attack-defense to such an extent that he has no natural enemies and so must turn against himself to provide the necessary destruction tests. You see, mankind has not engaged in war without useful results. War adds an essential eugenic mechanism to man's social structure.

Let's see how it works. In a world prone to famine, which is the ultimate in poverty, wars are begun to distribute scarce goods unevenly—the most to the conqueror—a fair deal since the conqueror would in general have better genetic ability to stay alive in this rough and tumble universe than the vanquished. During the battle the defective specimens of both sides would be destroyed thus causing mutual enrichment. The division of food would insure the conqueror against famine—and incidently insure that more of the inferior vanquished would die. Not only that, but, because the conquering armies would be occupying the fallen land, they would be spreading their seed, improving the stock of the conquered to a marked degree.

War, then, not only provides for the survival of the best society, but selects the best of the current crop of youngsters for breeding. This is why the entire population, including civilians, should always be involved in wars. It would be improper that people who have escaped military service should altogether escape this rigorous test of their genetic suitability.

I will have to elaborate because I anticipate objections. What of the radiation from atomic bombs? Wouldn't it do terrible things to the genetics of the race? Probably not. So far as is known, atomic radiation has little or no effect upon human genetics. We are not fruit flies, remember. Trying to mutate genes with gamma or X radiation is like trying to crack an egg with a pile-driver. The egg is cracked but inedible; the gene is mutated—or destroyed—to the extent that any cell it forms a part of is nonviable. Of course, if evidence comes in to the contrary, atomic weapons must be outlawed and we must go back to more conventional forms of war. But is the annihilation of a whole city a selective process? It is in a way. A human must have a certain intelligence and foresight and adaptability to know when not to be in a city which is about to be bombed. That is a very desirable characteristic. It is just such esoteric capacities we wish to preserve.

The principal advantage of atomic war, however, is that it would create a severe change for the survivors. For a survivor to survive the aftermath would require real adaptability, stamina, intelligence. He would not only have to show a high capacity for self-preservation, but would also have to show in abundance those qualities which give the race its high survival potential—a compassion for one's enemy, a selfless devotion to the survival of others, love, charity, mercy. A man cannot survive alone.

We could hardly imagine a better all around test of the human organism than atomic war. And the test would involve civilians, soldiers, women, everybody.

The selection of breeding stock by testing the young adult's resistance to destruction is a valid breeding program proven by a billion years of successful operation. War helps to place us on the main line of evolution. When a better-than-human type comes along and succeeds in the test of war we will be disposed of and the superior type will be proven despite our objections. By breeding more than enough soldiers, by fighting, by putting ourselves to the test of life, by flinging ourselves into the struggle with a Death which shows little mercy and allows few survivors we can achieve the knowledge that we belong to the Earth, that we are part of that growing, tenacious, flow-

ering life structure which has evolved from the most insignificant of seeds planted in this planet's seas so many million years ago. Our bodies can nurture that plant.

We are a great race of fighters and I think we always will be as long as we last on this Earth. We have the courage to face the fight even though we know that no matter how strong and clever we become, nature will always have more than enough strength to hit back at us. The casualties are high but it is not a futile fight. We gain strength, always, in every direction. We know that by fighting we belong to a purpose greater than ourselves—the creation of that which will be the end product of Earth's long evolution. Toward this purpose the best shall survive exercising their Right to Breed, while the weak shall be the casualties receiving for their essential death eternal gratitude.

THE END

THE ANALYTICAL LABORATORY

The ideal story, I feel, is one that induces each reader to do some thinking and judging of the ideas presented. And to have such a characteristic, the story must present a genuinely debatable problem.

So—I wonder if the pretty even distribution of votes in an An Lab report can't have a number of interpretations? They were quite evenly distributed in the votes on The January 1955 issue:—

PLACE	STORY	AUTHOR	POINTS
1.	Field Expedient	Chad Oliver	2.17
2.	The Darfstellar	Walter M. Miller, Jr.	2.29
3.	Nothing New	Eric Frank Russell	3.31
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THE EDITOR.

THE PLAYERS

BY EVERETT B. COLE

A Playboy is someone with power, too much time on his hands, and too little sense of a goal worth achieving. And if the Playboy happens to belong to a highly advanced culture. . . .

Illustrated by Solo

Through the narrow streets leading to the great plaza of Karth, swarmed a colorful crowd—buyers, idlers, herdsmen, artisans, traders. From all directions they came, some to gather around the fountain, some to explore the wineshops, many to examine the wares, or to buy from the merchants whose booths and tents hid the cobblestones.

A caravan wound its way through a gate and stopped, the weary beasts standing patiently as the traders sought vacant space where they might open business. From another gate, a herdsman guided his living wares through the crowd, his working animals snapping at the heels of the flock, keeping it together and in motion.

Musa, trader of Karth, sat cross-legged before his shop, watching the scene with quiet amusement. Business was good in the city, and his was pleasingly above the average. Western caravans had come in, exchanging their goods for those eastern wares he had acquired. Buyers from the city and from the surrounding hills had come to him, to exchange their coin for his goods. He glanced back into the booth, satisfied with what he saw, then resumed his casual watch of the plaza. No one seemed interested in him.

There were customers in plenty. Men stopped, critically examined the contents of the displays, then moved on, or stayed to bargain. One of these paused before Musa, his eyes dwell-

ing on the merchant rather than on his wares.

The shopper was a man of medium height. His rather slender, finely featured face belied the apparent heaviness of his body, though his appearance was not actually abnormal. Rather, he gave the impression of being a man of powerful physique and ascetic habits. His dress was that of a herdsman, or possibly of an owner of herds from the northern Galankar.

Musa arose, to face him.

"Some sleeping rugs, perhaps? Or a finely worked bronze jar from the East?"

The stranger nodded. "Possibly. But I would like to look a while if I may."

Musa stepped aside, waving a hand. "You are more than welcome, friend," he assented. "Perhaps some of my poor goods may strike your fancy."

"Thank you." The stranger moved inside.

Musa stood at the entrance, watching him. As the man stepped from place to place, Musa noted that he seemed to radiate a certain confidence. There was a definite aura of power and ability. This man, the trader decided, was no ordinary herdsman. He commanded more than sheep.

"You own herds to the North?" he asked.

The stranger turned, smiling. "Lanko is my name," he said. "Yes, I come from the North." He swept a hand to indicate the merchandise on display, and directed a question-



ing gaze at the merchant. "It seems strange that your goods are all of the East. I see little of the West in all your shop."

Normally, Musa kept his own council, assuming that his affairs were not public property, but his alone. There was something about this man, Lanko, however, which influenced him to break his usual reticence.

"I plan a trading trip to the Eastern Sea," he confided. "Of course, to carry eastern goods again to the East would be a waste of time, so I am reserving my western goods for the caravan and clearing out the things of the East."

Lanko nodded. "I see." He pointed to a small case of finely worked jewelry. "What would be the price of those earrings?"

Musa reached into the case, taking out a cunningly worked pair of shell and gold trinkets.

"These are from Norlar, a type of jewelry we rarely see here," he said. "For these, I must ask twenty balata."

Lanko whistled softly. "No wonder you would make a trip East. I wager there is profit in those." He pointed. "What of the sword up there?"

Musa laughed. "You hesitate at twenty balata, then you point out that?"

He crossed the tent, taking the sword from the wall. Drawing it from its scabbard, he pointed to the unusually long, slender blade.

"This comes from Norlar, too. But the smith who made it is still farther

to the east, beyond the Great Sea." He gripped the blade, flexing it.

"Look you," he commanded, "how this blade has life. Here is none of your soft bronze or rough iron from the northern hills. Here is a living metal that will sever a hair, yet not shatter on the hardest helm."

Lanko showed interest. "You say this sword was made beyond the Great Sea? How, then, came it to Norlar and thence here?"

Musa shook his head. "I am not sure," he confessed. "It is rumored that the priests of the sea god, Kondaro, by praying to their deity, are guided across the sea to lands unknown."

"Taking traders with them?"

"So I have been told."

"And you plan to journey to Norlar to verify this rumor, and perhaps to make a sea voyage?"

Musa stroked his beard, wondering if this man could actually read thoughts.

"Yes," he admitted, "I had that in mind."

"I see." Lanko reached for the sword. As Musa handed it to him, he extended it toward the rear of the booth, whipping it in an intricate saber drill. Musa watched, puzzled. An experienced swordsman himself he had thought he knew all of the sword arts. The sword flexed, singing as it cut through the air.

"Merchant, I like this sword. What would its price be?"

Musa was disappointed. Here was strange bargaining. People just didn't

walk in and announce their desire for definite articles. They feigned indifference. They picked over the wares casually, disparagingly. They looked at many items, asking prices. They bargained a little, perhaps, to test the merchant. They made comments about robbery, and about the things they had seen in other merchants' booths which were so much better and so much cheaper.

Slowly, and with the greatest reluctance, did the normal shopper approach the object he coveted.

Then, here was this man.

"Well," Musa told himself, "*make the most of it.*" He shrugged.

"Nine hundred balata," he stated definitely, matching the frank directness of this unusual shopper, and incidentally doubling his price.

Lanko was examining the hilt of the sword. He snapped a fingernail against its blade. There was a musical *ping*.

"You must like this bit of metal far better than I," he commented without looking up. "I only like it two hundred balata worth."

Musa felt relief at this return to familiar procedure. He held up his hands in a horrified gesture.

"Two hundred!" he cried. "Why, that is for the craftsman's apprentices. There is yet the master smith, and those who bring the weapon to you. No, friend, if you want this prince of swords, you must expect to pay for it. One does not—" He paused. Lanko was sheathing the weapon, his whole bearing expressing unwilling relinquishment.

Musa slowed his speech. "Still," he said softly, "I am closing out my eastefn stock, after all. Suppose we make it eight hundred fifty?"

"Did you say two hundred fifty?" Lanko held the sheathed sword up, turning to the light to inspect the leather work.

The bargaining went on. Outside, the crowds in the street thinned, as the populace started for their evening meals. The sword was inspected and re-inspected. It slid out of its sheath and back again. Finally, Musa sighed.

"Well, all right. Make it five hundred, and I'll go to dinner with you." He shook his head in a nearly perfect imitation of despair. "May the wineshop do better than I did."

"Housewife, this is Watchdog. Over."

The man at the workbench looked around. Then, he laid his tools aside, and picked up a small microphone.

"This is Housewife," he announced.

"Coming in."

The worker clipped the microphone to his jacket, and crossed the room to a small panel. He threw a switch, looked briefly at a viewscreen, then snapped another switch.

"Screen's down," he reported. "Come on in, Lanko."

An opening appeared in the wall, to show a fleeting view of a bleak landscape. Bare rocks jutted from the ice, kept clear of snow by the shrieking wind. Extreme cold crept into the room, then a man swept in and

the wall resumed its solidity behind him.

He stood for an instant, glancing around, then shrugged off a light robe and started shedding equipment.

"Hi, Pal," he was greeted. "How are things down Karth way?"

"Nothing exceptional." Lanko shrugged. "This area's getting so peaceful it's monotonous. He unsnapped his accumulator and crossed to the power generator.

"No wars, or rumors of wars," he continued. "The town's getting moral—very moral, and it's developing into a major center of commerce in the process." He kicked off his sandals, wriggled out of the baggy native trousers, and tossed his shirt on top of them.

"No more shakedownns. Tax system's working the way it was originally intended to, and the merchants are flocking in."

He walked toward the wall, flicking a hand out. An opening appeared, and he ducked through it.

"Be with you in a minute, Banasel," he called over his shoulder. "Like to get cleaned up."

Banasel nodded and went back to the workbench. He picked up a small part, examined it, touched it gently a few times with a soft brush, and replaced it in the device he was working on.

He tightened it into place, and was checking another component when a slight shuffle announced his companion's return.

"Oh, yes," said Lanko. "Met your

old pal, Musa. He's doing right well for himself."

Banasel swung around. "Haven't seen him since we joined the Corps. What's he doing?"

"Trading." Lanko opened a locker, glancing critically at the clothing within. "He set up shop with the load of goods we gave him long ago, and did some pretty shrewd merchandising. Now, he's planning a trip over the Eastern Sea. He hinted at a rumor of a civilization out past Norlar."

"Nothing out there for several thousand kilos," growled Banasel, "except for a few little islands." He jerked a thumb toward the workbench. "I can't show you right now, because the scanner's down for cleaning, but there isn't even an island for the first couple thousand K's. Currents are all wrong, too. No one could cross without navigational equipment."

"I know," Lanko assured him. "We haven't checked over that way for a long time, but I still remember. I didn't put it exactly that way, of course, but I did ask Musa how he planned to get over the Eastern. And, I got an answer." He paused as he gathered up the garments he had discarded.

"It seems there's a new priesthood at Norlar, who've got something," he continued. "It's all wrapped up in religious symbology, and they don't let any details get out, but they are guiding ships out to sea, and they're bringing them back again, loaded with goods that never originated in

the Galankar, or in any place accessible to the Galankar." He hung up the last article of clothing and turned, a sheathed sword in his hand.

"Musa sold me this," he said, extending the hilt toward Banasel. "I never saw anything like it on this planet. Did you?"

Banasel accepted the weapon, drawing it from its scabbard. He examined the handwork on the hilt, then snapped a fingernail against the blade. As he listened to the musical *ping*, the technician looked at the weapon with more interest. Gently, he flexed it, watching for signs of strain. Lanko grinned at him.

"Go ahead," he invited, "get rough with it. That's a sword you're holding, Chum, not one of those bronze skull busters."

Banasel extended the sword, whipping it violently. The blade bent, then straightened, and bent again, as it slashed through the air.

"Well," he murmured. "Something new."

He put the sword on the workbench and took an instrument from a cabinet. For a few minutes, he busied himself taking readings and tapping out data on his computer. He sat back, looking at the sword curiously. At last, he glanced at the computer, then put the test instrument he had been using back in the cabinet, taking another to replace it. After taking more readings, he looked at the computer, then shook his head, turning to Lanko.

"This," he said slowly, "is excel-

lent steel. Of course, it could be an accidental alloy, but I wouldn't think anyone on this planet could have developed the technology to get it just so." He held the sword away from him, looking at it closely. "Assuming an accidental alloy, an accident in getting precisely the right degree of heat before quenching, and someone who ground and polished with such care as to leave the temper undisturbed, while getting this finish— Oh, it's possible, all right. But 'tain't likely. Musa told you this came from overseas?"

"To the best of his knowledge. He got it from a trader who claimed to have been on a voyage across the Eastern Sea."

Banasel leaned back, clasping his hands behind his head. "You must have had quite a talk with Musa. Did he remember you?"

Lanko shook his head. "Don't be foolish," he grunted. "You and I were blotted out of his memory, remember? So are quite a few of the things that happened around Atakar, way back when. He's got a complete past, of course, but we're not part of it."

"No, he had a booth in the Karth market. I came through, just looking things over, and recognized him. So, I picked an acquaintance. Beat him down to about half the asking price for this sword, still leaving him a whopping profit. He went to dinner with me, still bewailing the rooking I'd given him. Told you, he's a trader. We had quite a talk, certainly. But we were strangers."

"Yeah." Banasel looked off into space. "Seems funny. You and I were born on this planet. We were brought up here, and a lot of people once knew us. But they've all forgotten, and we don't belong any more. I'm beginning to see what they mean by 'the lonely life of a guardsman.'"

He was silent for a time, then looked at his companion.

"Do you think these priests at Norlar might be in our line of business?"

"Could be," nodded Lanko. "There's a lot of seafaring out of Konassa, and there are several other busy seaports we know of. But no one in any of them ever heard of navigation out of sight of land, let alone trying it. There's nothing but pilotage, and even that's pretty sketchy. And, there's this thing." He crossed to the workbench, picked up the sword, and stroked its blade.

"Normally," he mused, "technical knowledge gets around. Part of it's developed here, part there. Then someone comes along and puts it together. And someone else adds to it. And so on.

"Then, there are other times, when there's an abnormal source, or where there are unusual conditions, and knowledge is very closely guarded. This might be one of those cases, and those priests might be fronting for someone very much in our line of business." He broke off.

"Any maedli hot?"

"Sure." Banasel picked a pot from the heater and poured two cups.

"Think we should set up a base near Norlar and have a look?"

"Probably be a good idea." Lanko accepted a cup, took a sip, and shook his head violently.

"Ouch! I said hot, not boiling." He blew on the cup and set it aside to steam itself cool.

"These mountains were an excellent base," he continued, "but this area seems to be developing perfectly. There's no outside interference, all traces of former interference have been eliminated, and there's very little excuse for us to hang around." He picked up the cup again, cautiously sampling its contents. "And it's about time we moved around and checked on the rest of the planet."

Banasel turned back to the workbench. "Good idea," he agreed. "I'll get this scanner set up again, and we'll be ready to load out." He picked up his tools. "As I remember, Norlar has a mountainous backbone where no one ever goes. We should be able to set up right on the island."

On the eastern slope of the Midra Kran, a cloud of dust paced a caravan, which wound up the trail, through a pass. The treachery of the narrow path was testified to by an occasional slither, followed by a startled curse.

Musa stood in his stirrups, looking ahead at the long trail which twisted a little farther up, then dropped to the wide Jogurthan plateau. Far ahead, over the poorly marked way, he knew, was another range,

the Soruna Kran, which blocked his way to the Eastern Sea.

He looked back at the straggling caravan.

"Better get them to close up, Baro," he remarked. "We'd be in a lot of trouble if a robber band caught us scattered like this."

The other trader nodded and turned his mount. Then, he paused as shouts came from the rear of the line. Mixed with the shouting was the clatter of weapons.

"Come on," cried Musa. "It's happened."

He kicked his mount in the ribs, and swung about, starting up the steep bank. The bandits would have bowmen posted to deal with anyone who might try to get back along the narrow path, and he had no desire to test the accuracy of their aim.

As his beast scrambled up the bank, Musa saw a man standing on a pinnacle, alertly watching the center of the caravan. His guess had been right. The bandit leader's strategy had been to cut the caravan in two, and to deal with the rear guard first. As the watcher started to aim at something down on the trail, Musa quickly raised his own bow and sent an arrow to cut the man down before he could fire.

It was a good shot. The man made no sound as the arrow struck, but clawed for an instant at the shaft in his side, then dropped, to slide down the face of a low cliff. Musa, followed by his guards, stormed up the slope.

They went through a saddle in the

hill, to find themselves confronted by a half dozen men, who swung about, trying to bring their bows to bear on the unexpected targets. Two of these went down as arrows sang through the air, then the traders were upon the rest, swords flailing, too close for archery.

One of the bandits swung his sword wildly at Musa, who had drawn a twin to that blade he had sold back in Karth. The slender shaft of steel rang against the bandit's bronze blade, deflecting it, then Musa made a quick thrust which passed through the man's leather shield, to penetrate flesh. The bronze weapon sagged, and its holder staggered. Musa jerked back violently, disengaged his sword, and made a swift cut. For an instant, the bandit sat his mount, staring at his opponent. Then, he slumped, and rolled loosely from his saddle.

The action had been fast. Only one bandit, a skilled swordsman, remained, to keep Baro busy. Musa rode quickly behind him, thrusting as he passed. Baro looked across the limp body.

"Now, what did you have to do that for?" he demanded. "I was having a good time."

"Let's get down to the trail again," Musa told him. "We can have a wonderful time there." He pointed.

The caravan's rear guard was in trouble. Several of them were in the dust of the trail, and the survivors were being pressed by a number of determined swordsmen.

Baro wheeled and slid down the

incline, closely followed by the rest of the group.

The surrounded bandits fought desperately, but hopelessly. The charge from the hill had driven them off balance, and they were never given a chance to recover. At last, Musa and Baro looked over the results of the raid.

They had lost several guards. One trader, Klaron, had been killed by an arrow launched early in the attack. Several of the survivors were wounded.

"We'll have to hire some more guards and drivers in Jogurth," said Baro. "And what are we going to do about Klaron's goods?"

"We can divide them and sell them in Jogurth," Musa told him. "Klaron has a brother back in Karth who can use the money, and money's a lot easier to carry than goods. You'll see him on your return trip."

Baro nodded, and started up the line, reorganizing the caravan. At last, they got under way again, and resumed their slow way toward the plateau.

The caravan went on, to enter the plateau, where the traders started resting by day and traveling by night, to avoid exertion during the day's heat.

They came to the city of Jogurth, which for most of them was a terminal. From there, they would return to Karth, a few possibly going on to their homes still farther west. Musa stayed in town for a few days, trading his few remaining eastern

goods for locally produced articles, and helping in the sale of Klaron's goods. At last, he joined another caravan, headed by an old trader, Kerunar, who habitually traveled between Jogurth and Manotro, on the east coast.

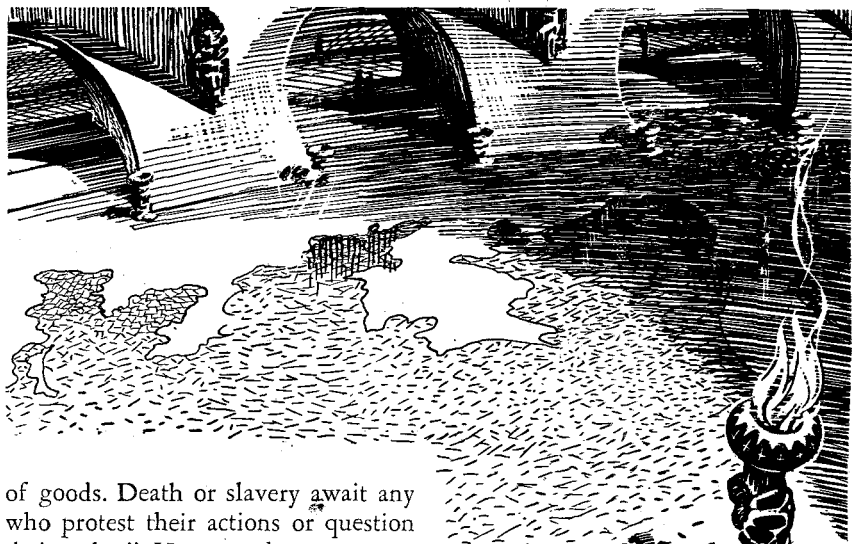
The trip across the Soruna Kran was uneventful, and Musa finally saw the glint of the Eastern Sea. He did not stay long in Manotro, for he discovered that the small channel ships traveled frequently, and he was able to guide his pack beasts to the wharf, where his bales were accepted for shipment. Leaving his goods, he led his animals back to the market.

Old Kerunar shook his head when he saw Musa. "Be careful, son," he cautioned. "I've been coming here for twenty years. Used to trade in Norlar, too. But you couldn't get me over there now for ten thousand caldor."

"Oh?" Musa looked at him curiously. "What's wrong?"

Kerunar looked at his newly set up booth. Hung about it were durable goods and trinkets from a dozen cities. There were articles even from far-off Telon, in the Konassan gulf. He looked back at Musa.

"Norlar," he declared, "has fallen into the hands of thieves and murderers. You can trade there, to be sure. You can even make a profit. But you cannot be sure you will not excite the avarice of the Kondarans, or arouse their anger. For they have a multitude of strange laws, which they can invoke against anyone, and which they enforce with confiscation



of goods. Death or slavery await any who protest their actions or question their rules." He paused.

"Some manage to trade, and come back with profitable bales. Some leave their goods in the hands of the priests of Kondaro. Some remain, to find a quick death. But I stop here. I prefer to deal with honorable men. When I face the thief or the bandit, I prefer to have a weapon in my hand. A book of strange laws can be worse than any bandit born."

Musa looked about the market. "Here, of course," he acknowledged, "are the goods of the Far East. But I must see them at their source." He shook his head. "No," he decided, "I shall make one trip at least."

"I'll give you just one word of caution, then," he was told. "Whatever you see, make little comment. Whenever you are asked for an offering, make no objection, but give liberally. Keep your eyes open and your opinions to yourself."

"Thanks." Musa grinned. "I'll try to remember."

"Don't just remember. Follow the advice, if you wish to return."

Musa's grin widened. "I'll be back," he promised.

The harbor of Tanagor, chief seaport of Norlar, was full of shipping. Here were the ships which plied the trackless wastes of the Eastern Sea. Huge, red-sailed, broad-beamed, they rode at anchor in the harbor, served by small galleys from the city. Tied up at the wharves, were the smaller, yellow and white-sailed ships which crossed the channel between the mainland and the island empire.

Slowly, Musa's ship drew in toward the wharf, where a shouting gang of porters and stevedores awaited her arrival. Together with other passengers, Musa stood at the rail, watching the activity on the pier.

Four slaves, bearing a crimson curtained litter, came to the wharf and stopped. The curtains opened, and a man stepped out. He was not large, nor did his face or figure differ from the normal. But his elegantly embroidered crimson and gold robes made him a colorfully outstanding figure, even on this colorful waterfront. And the imperious assurance of his bearing made him impossible to ignore.

He adjusted his strangely shaped, flat cap, glanced about the wharf haughtily, and beckoned to one of the slaves, who reached inside the litter and took from it an ornately

decorated crimson chest. Another slave joined him, and the two, carrying the chest with every evidence of reverent care, followed their crimson-cloaked master as he strode into a pier office.

Musa turned to one of the other merchants, his eyebrows raised inquiringly.

"A priest of Kondaro," whispered the other. "In this land, they are supreme. Take care never to anger one of them, or to approach too closely to the sacred chest their slaves carry. To do so can mean prompt execution."

As Musa started to thank the man for his friendly warning, a cry of "Line Ho!" caused him to turn his attention to the mooring parties. Lines had been cast aboard at bow and stern, and the ship was rapidly being secured to stout bollards ashore.

A gang of stevedores quickly rigged a gangway amidships, and porters commenced streaming aboard to carry the cargo ashore. Another gangway was rigged aft for the passengers. At the foot of this, stood one of the priest's litter bearers, a slave with a crimson loincloth. In his hands, he held a large, red bowl, which was decorated with intricate gold designs. Beside him, stood his companion, a sturdy, frowning fellow, who held a large, strangely shaped sword in his hand. Musa's previous mentor leaned toward him nodding to the group.

"Don't forget or fail to put a coin in that bowl," he cautioned. "Other-

wise, you'll never get passage on one of the sacred ships."

"How much?" queried Musa.

"The more, the better. If you want quick passage across the Great Sea, better make it at least ten caldor."

Musa shrugged, reaching into his purse for a gold coin.

"Maybe I should be in the priesthood myself, instead of the trading business," he told himself silently.

As he passed the bowl, he noted that the other trader dropped only a silver piece. On the wharf, the incoming passengers were being guided into groups. Musa noted that his group was the smallest, and that his previous friend had gone to another, larger group. An official, tablet in hand, approached.

"Your name, Traveler?"

"Musa, trader, of Karth."

"You have goods?"

"I brought twelve bales. They are marked with my name."

"Very good, sir. We will hold them for your disposal. You may claim them at any time after midday." The man wrote rapidly on his tablet.

Musa thanked him, then turned to see how his shipboard acquaintance was progressing. He had questions to ask about gold and silver coins.

He watched the older merchant complete his conversation with an official, and, as he started to leave the wharf, quickly caught up with him. At Musa's approach, the other held up a hand.

"I know," he said. "Why did I

tell you to make a generous offering, then put a smaller coin in the bowl myself? That is what you want to know?"

"Precisely," Musa replied. "I'm not a poor man, but I'm not a wealthy holiday seeker, either. This voyage has to pay."

The other smiled. "Exactly why I advised you as I did. Come into this wineshop, and I'll tell you the story."

Over the drinks, the older man explained himself. An experienced trader, he had been operating between the mainland and Norlar for many years. It had been a profitable business, for the island had been dependent upon the mainland for many staple items, and had in return furnished many items of exquisite craftsmanship, as well as the produce of its extensive fisheries and pearl beds.

Then, the prophet, Sira Nal, had come with his preachings of a great sea god, Kondaro, ruler of the Eastern Sea. Tonda told of the unbelief that had confronted the prophet, and of the positive proof that Sira Nal had offered, when he had gathered a group of converts, collected enough money to purchase a ship, and made a highly successful voyage to the distant lands to the east. Upon his return, Sira Nal had found a ready market for the strange and wonderful products he had brought. He also had found many more converts for his new religion.

His original group, now a priest-

hood, were the only men who could give protection and guidance to a ship in a voyage past the sea demons who frequented the Eastern Sea, and they demanded large offerings to compensate for their services. Of course, a few adventurous shipowners had attempted to duplicate Sira Nal's feat without the aid of a priest, but no living man had seen their ships or crews again.

The profits from the rich, new trade, plus the alms of the traders visiting Tanagor, had rapidly filled the coffers of Kondaro. A great temple had been built, and the priests had become more and more powerful, until now, not too many years after the first voyage of Sira Nal, they virtually ruled the island.

For some years, Tonda, a conservative man and a firm believer in his own ancestral gods, had paid little attention to this strange, new religion. Upon arrival at Tanagor, to be sure, he had sometimes placed small offerings in the votive bowl, but more often, he had merely strode past the Slave of Kondaro, and gone upon his affairs.

At last, however, attracted by the great profits in the new, oversea trade, he had decided to arrange for a voyage in one of the great ships. Then, the efficiency of the priestly bookkeeping methods had become apparent. The Great God had become incensed at Tonda's impiety during his many previous trips across the channel, and a curse had been placed upon him and upon his goods. Of course, if Tonda wished to do

penance, and to make votive offerings, amounting to about two thousand caldor, it might be that the Great God would relent and allow his passage, but only with new goods. His former possessions had been destroyed by the angry Kondaro in his wrath at Tonda's attempts to place them in one of the sacred ships. Empty-handed, Tonda had returned to the mainland.

"But why did you return with more goods?" inquired Musa.

Tonda smiled. "The wrath of Kondaro extends only to the Great Sea. And, even though I cannot go farther east, trade here in Tanagor is quite profitable." He paused, smiling, as he sipped his drink.

"I think the priests like having a few penitents around to explain things to newcomers, and to furnish examples of the power of Kondaro."

Musa smiled in response. "But my ten caldor make me and my goods acceptable?"

Tonda looked around quickly, then turned a horrified face toward his protégé.

"Never say such things," he cautioned in a low tone of voice. "Don't even think them. Your piety makes you acceptable, so long as you continue in a way pleasing to the great Kondaro. The money means nothing. It is only the spirit of sacrifice that counts."

"I see." Musa's face was solemn. "And how else may I be sure I will remain acceptable?"

Tonda nodded approvingly. "I thought you were a man of good

sense and prudence." He launched into a description of the technicalities of the worship of Kondaro, the god of the Eastern Sea.

At length, Musa left his tutor, and repaired to an inn, where he secured lodging for the night.

The following morning, in obedience to the advice given him by Tonda, Musa took his way toward the Temple of the Sea. As he threaded through the crowds already gathering in the streets, he took note of the types of merchandise displayed in the booths, and hawked by the street peddlers. Suddenly, one of these roving sellers approached him. In his hands he held a number of ornaments.

"Good day to you, oh Traveler," he cried. "Surely, it is a fortunate morning for both of us." With a deft gesture, he threw one of the trinkets, a cunningly contrived amulet, about Musa's neck.

Musa would have brushed the man aside, but the chain of the amulet had tangled about his neck and he was forced to pause while removing it.

"I told myself when I saw you," the man continued, "ah, Banasel, here is one who should be favored by the gods. Now, how can such a one venture upon the Eastern Sea without a sacred amulet?"

Musa had slipped the chain over his head. He paused, holding the ornament in his hand. "How, then, are you to know where I am going?"

"Oh, Illustrious Traveler," exclaimed the man, "how can I fail to know these things when it is given to me to vend these amulets of great fortune?"

In spite of himself, Musa was curious. He looked at the amulet. There was no question as to the superb workmanship, and his trading instincts took over.

"Why, this is a fair piece of work," he said. "Possibly I could spare a caldor or so."

The man before him struck his forehead.

"A caldor, he says! Why, the gold alone is worth ten."

Musa looked more closely at the ornament. The man was probably not exaggerating too much. Actually, he knew he could get an easy twenty-five balata for the bauble in Karth. A rapid calculation told him that here was a possible profit from the skies.

"Why, possibly it is worth five, at that," he said. "Look, I'll be generous. Shall we say six?"

"Oh, prince of givers! Thou paragon of generosity! After all, I, too, must live." The man smiled wryly. "However, you are a fine, upstanding young man, and one must make allowance. I had thought to ask twenty, but we'll make it ten. Just the price of the gold."

Musa smiled inwardly. The profit was secured, but maybe—

"Let's make it eight, and I'll give you my blessing with the money."

The man held out his hand. "Nine."

Musa shrugged. "Very well, most expert of vendors." He reached into his purse.

Banasel hesitated before accepting the money. He looked Musa over carefully, then nodded as if satisfied.

"Yes," he said softly, "I was right." He paused, then addressed himself directly to Musa.

"We must be very careful to whom we sell these enchanted amulets," he explained, "for they are talismans of the greatest of powers. The wearer of one of these need never fear the unjust wrath of man, beast, or demon, for he has powerful protectors at his call. Only wear this charm. Never let it out of your possession, and you will have nothing to fear during your voyage. Truly, you will be most favored."

He looked sharply at Musa again, took the money, glanced at it, and dropped it into a pouch.

"Do you really believe in the powers of your ornaments, then?" Musa asked skeptically.

Banasel's eyes widened, and he spread his arms. "To be sure," he said in a devout tone. "How can I believe else, when I have seen their miraculous workings so often?" He held up a hand. "Why, I could spend hours telling you of the powers these little ornaments possess, and of the miracles they have been responsible for. None have ever come to harm while wearing one of these enchanted talismans. None!" He spread his arms again.

Musa looked at him curiously. "I should like to hear your stories some day," he said politely.

He felt uncomfortable, as many people do when confronted by a confessed fanatic. His feelings were divided between surprise, a mild contempt, and an unease, born of wonder and uncertainty.

Obviously, the man was not especially favored. He was dressed like any street peddler. He had the slightly furtive, slightly brazen air of those who must avoid the anger, and sometimes the notice, of more powerful people, and yet, who must ply their trade. But he talked grandly of the immense powers of the baubles he vended, seeming to hold them in a sort of reverence. And, when he had spread his arms, there had been a short-lived hint of suppressed power. Musa shuddered a little.

"But I must go to the temple now, if I am to make arrangements for my voyage," he added apologetically. He turned away, then hurried down the street.

Banasel watched him go, a slight smile growing on his face.

"I don't blame you, Pal," he chuckled softly. "I'd feel the same way myself."

He glanced around noting a narrow alley. Casually, he walked into it, then looked around carefully. No one could observe him. He straightened, dropping the slightly disreputable, hangdog manner, then reached for his body shield controls.

Quickly, he cut out visibility, then

actuated the levitator modulation and narrowed out of the alley, rose over the city, and headed toward the rugged mountains that formed the backbone of the island.

Lanko was waiting, and quickly lowered the base shield.

"Well," he asked, "how did it go?"

"I found him." Banasel walked over to the cabinets, and started sorting the goods he had been carrying. "Sold him a miniature communicator. Now, I hope he wears the thing."

"We'll have to keep a close watch on him," commented Lanko, "just in case he puts it in his luggage and forgets about it. Did you give him a good sales talk?"

"Sure. Told him to wear it always. I pawed the air, raved a little, and made him think I was crazy. But I've an idea he'll remember and grab the thing if he sees trouble coming." Banasel put the last ornament in its place, and started unhooking his personal equipment. Then, he turned.

"Look," he commented, "why bother with all this mystic business? We've got mentacoms. Why not just clamp onto him, and keep track of him that way? It'd be a lot simpler. Less chance of a slip, too."

"Yeah, sure it would." Lanko gave his companion a disgusted look. "But have you ever tried that little trick?"

"No. I never had the occasion, but I've seen guardsmen run remote

surveillances, and even exert control when necessary. They didn't have any trouble. We could try it, anyway."

Lanko sat up. "We could try it," he admitted, "but I know what would happen. I did try it once, and I found out a lot of things—quick." He looked into space for a moment. "How old are you, Banasel?"

"Why, you know that. I'm forty-one."

Lanko nodded. "So am I," he said. "And our civilization is a few thousand years old. And our species is somewhat older than that. We were in basic Guard training, and later in specialist philosophical training together. It took ten years, remember?"

"Sure. I remember every minute of it."

"Of course you do. It was that kind of training. But how old do you think some of those young guardsmen we worked with were?"

"Why, most of 'em were kids, fresh from school."

"That they were. But how many years—our years—had they spent in their schooling? How old were the civilizations they came from? And how old were their species?"

Lanko eyed him wryly.

Banasel looked thoughtfully across the room. "I never thought of it that way. Why, I suppose some of their forefathers were worrying about space travel before this planet was able to support life. And, come to think of it, I remember one of them making a casual remark about 'just

"a period ago,' when he was starting citizen training."

"That's what I mean." Lanko nodded emphatically. "'Just a period.' Only ten or twelve normal lifetimes for our kind of people. And his civilizations's just as old compared to ours as he is compared to us—older, even."

"During that period he was so casual about, he was learning—practicing with his mind, so that the older citizens of the galaxy could make full contact with him without fear of injuring his mentality. He was learning concepts that he wouldn't dare even suggest to you or to me. Finally, after a few more periods, he'll begin to become mature. Do you think we could pick up all the knowledge and training back of his handling of technical equipment in a mere ten years of training?"

Banasel reached up, taking the small circlet from his head. He held it in his hand, looking at it with increased respect.

"You know," he admitted, "I really hadn't thought of it that way. They taught me to repair these things, among other pieces of equipment, and most of the construction is actually simple. They taught me a few uses for it, and I thought I understood it."

"Of course, I knew we were in contact with an advanced culture, and I knew that most of those guys we treated so casually had something that took a long time in the getting, but I didn't stop to think of the real stretch of time and study involved."

He leaned back, replacing the mentacorn on his head. "Somehow, they didn't make it apparent."

"Of course they didn't." Lanko spread his hands a little. "One doesn't deliberately give children a feeling of inferiority."

"Yeah. Will we ever learn?"

"Some. Some day. But we've got a long, lonely road to travel first." Lanko stood up and adjusted the communicator.

"Right now, though, we'd better keep tabs on Musa. In fact, we'd better follow him when he leaves here."

The temple of Kondaro, the sea god, had been built at the edge of a cliff, so that it overlooked the Eastern Sea. The huge, white dome furnished a landmark for mariners far out at sea, and dominated the waterfront of Norlar. Atop the dome, a torch provided a beacon to relieve the blackness of moonless nights. This was the home of the crimson priests, and the center of guidance for all who wished to sail eastward.

Musa stood for some time, admiring the temple, then walked between the carefully clipped hedges and up the long line of steps leading to the arched entrance.

Again, he stopped. Overhead, the curved ceiling of the main dome was lower than its outer dimensions would lead one to believe, but Musa hardly noticed that. He gazed about the main rotunda.

It was predominantly blue. The dome was a smooth, blue sky, and

the smooth blueness continued down the walls. The white stone steps were terminated at the edges of a mosaic sea, which stretched to the far walls, broken only by a large statue of the sea god. Kondaro stood in the center of his temple, facing the entrance. One arm stretched out, the hand holding a torch, while the other arm cradled one of the great ships favored by the god. Beneath one foot was one of the batlike sea demons, its face mirroring ultimate despair. About the feet lapped conventionally sculptured waves, which melted into the mosaic, to be continued to the walls by the pattern of the tiles. At the far side of the rotunda, the double stairs, which led to bronze doors, were almost inconspicuous, seeming to be a vaguely appearing mirage on the horizon of a limitless sea.

The trader looked at the far side, then down, and hesitated, feeling as though he were about to walk on water. Then, he turned, remembering the pedestal nearby. A crimson bowl rested on this stand, and beside it was a slave in the crimson loincloth which marked the menials of Kondaro.

Musa stepped over to the pedestal, dropped a coin into the bowl, and walked toward the rear of the temple, making proper obeisance to the huge statue. A young priest approached him.

"I crave blessings for a voyage I propose to take," announced the trader.

The priest inclined his head.

"Very well, Traveler, follow me."

He led the way to a small office. An older priest sat at a large table, reading a tablet. Conveniently placed were writing materials, and on the table before him was another votive bowl. Musa dropped a coin into the bowl, and the priest looked up.

"I bring a voyager, O, Wise One," said the young priest.

"It is well," the older priest acknowledged in a deep voice. He turned to Musa. "Your name, Voyager?"

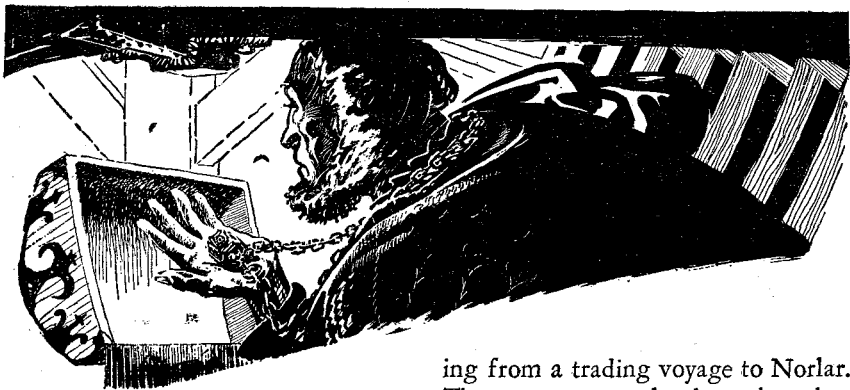
Musa gave his name, his age, the amount of his goods, and an account of his actions since his arrival in Tanagor. At the mention of Tonda, the priest nodded.

"The actions of Tonda have been most exemplary for the past several seasons," he remarked. "He is a good man, but he lacks the proper spirit of sacrifice." He concluded his writing.

"Well, then, Musa, you may go to those who sail ships with the blessing of Kondaro upon you. I shall only caution you as to the observance of the rites and laws for those who sail the Great Sea. Go now, in peace."

As Musa turned, the younger priest spoke. "I will lead you to one who will give you further guidance," he said.

Musa followed him to another small room, where he met still another priest. This man, he discovered, was a shrewd trader in his own right. He was familiar with goods and their values, and in addition to the rites



he described, he presented definite advice as to what to take and what to leave behind. Fortunately, Musa discovered as he talked to this priest, he had picked very nearly as good a selection as he could wish.

During the days that followed, Musa made more votive offerings, practiced the rites ordered by the priest, and watched his goods as they were delivered to the *Bordeklu*, a ship belonging to Maladro, beloved of Kondaro, a shipowner whose ships were permitted by the sea god and his priests to sail the Eastern Sea.

At last, the day arrived when Musa himself boarded the ship and set sail past the headland of Norlar.

As the ship was warped out of the harbor, Musa took stock of his fellow passengers. Among them were a slender, handsome man named Ladro, who had been on many previous voyages to the land of the East, and Min-ta, a native of the eastern continent, who was return-

ing from a trading voyage to Norlar. There were several others, but they kept to themselves, seeming to radiate an aura of exclusiveness. Ladro and Min-ta on the other hand, were more approachable.

Surely, thought Musa, these two can teach me a great deal of the land I am to visit, if they will.

He walked over to the rail, where the two stood, looking out over the shoreline. The ship was coming abreast of the great temple of Kondaro.

"It's the most prominent landmark on the island, isn't it?" Musa commented.

"What?" Ladro turned, looking at him curiously. "Oh, yes," he said, "the temple. Yes, it's the last thing you see as you leave, and the first when you return." He paused, examining Musa. "This is your first trip?"

"Yes, it is. I've always traded ashore before this."

"But you finally decided to visit Kneuros?"

"Yes. I've dealt with a few traders who had goods from there, and their stories interested me."

Ladro smiled. "Romance of the far places?"

"Well, there's that, too," Musa admitted, "but I'm interested in some of the merchandise I've seen."

"There's profit in it," agreed Ladro. "How long have you been trading around Norlar?"

"This is my first trip. I'm from Karth, in the Galankar."

"You mean you were never in Norlar before?" Min-ta joined the conversation.

Musa shook his head. "I left Karth for the purpose of trading east of the Great Sea."

"Unusual," mused Min-ta. "Most traders work between Tanagor and the mainland for several years before they try the Sea."

"Yes," added Ladro, "and some never go out. They satisfy themselves with the channel trade." He pointed. "We're getting out to the open sea now, past the reef."

The ship drew away from the island kingdom, setting its course toward the vague horizon. The day wore on, to be replaced by the extreme blackness of night. Then, the sky lit up again, heralding another day.

The ship's company had settled to sea routine, and the traders roamed about their portion of the deck, talking sometimes, or napping in the sun. Musa leaned over the low rail, watching the water, and admiring the clear, blue swells.

He raised his head as the door of the forward cabins opened. A priest, followed by a group of slaves, went

up to the raised forecandle. Under the priest's direction, the slaves busied themselves putting up a high, crimson and yellow curtain across the foredeck. They completed their task and went below.

Again, the door opened, and a procession, headed by the chief priest, slowly mounted the ladder to the forecandle. Each of the three priests was followed by his slave, who bore a crimson casket. The curtain closed behind them, then the slaves came out and ranged themselves across the deck, facing aft.

"I wonder," said Musa, turning to Ladro, "what ritual they are performing."

Ladro shook his head. "The less a man knows of the activities of the priests, the better he fares," he declared. "Truly, on a great ship, curiosity is a deadly vice."

Musa nodded to the stern. "I see that one of the priests is not at the bow."

"That is right. One priest always remains by the steersman, to ward off the spells of the sea demons." Ladro paused, pointing overside. "See," he said in a pleased tone, "here is an envoy from Kondaro."

Musa's gaze followed the pointing finger. A huge fish was cruising alongside, gliding effortlessly through the waves, and occasionally leaping into the air.

"An envoy?"

"Yes. So long as a kontar follows a ship, fair weather and smooth sailing may be expected. They are sent

by Kondaro as guardians for those ships he especially favors."

At a call from the priest in the stern, two sailors appeared, carrying chunks of meat. As the priest chanted, they tossed these overside. The great fish rose from the water, catching one of the chunks as it fell, then dropped back, and the water frothed whitely as he retrieved the other. He gulped the meat, then swam contentedly, still pacing the ship.

"Suppose someone fell overboard?" Musa gazed at the kontar in fascination.

Ladro and Min-ta exchanged glances.

"If one is favored by the Great One," replied Min-ta slowly, "it is believed that the kontar would guard him from harm. Otherwise, the sacrifice would be accepted."

Musa looked at the clear water, then glanced back to the spot of foam which drew astern.

"I don't believe I'll try any swimming from the ship." He backed slightly from the rail, glancing quickly at Ladro and Min-ta, then looking away again.

He suddenly realized that he had exceeded his quota of questions, and that he could get into trouble. He had noted that most of the ship's company appeared to know the other traders aboard, even though some of them hadn't been to sea before. Min-ta and Ladro were obviously well acquainted with several of the ship's officers. But he, Musa, was a stranger.

He had already observed that the

priesthood of Kondaro was not averse to a quick profit, and that they placed a low value on the lives and possessions of others. He had dealt with tribes ashore, who had the simple, savage ethic:

"He is a stranger? Kill him! Take his goods, and kill him."

Ashore, he had protected himself during his many trips by consorting with other traders of good reputation, and by hiring guards. But here? He remembered the remarks made by Kerunar back in Manotro.

"When I face the thief or the bandit, I prefer to have a weapon in my hand."

Slowly, he collected himself, and looked back at Ladro and Min-ta.

"If you gentlemen will excuse me," he apologized, "I have some accounts to cast, so I believe I'll go to my quarters." He turned and went below.

As he disappeared down the ladder, Ladro turned to his companion.

"Of course," he said thoughtfully, "if all goes well, this man will be most favored. But if the Great One shows signs of displeasure—"

Min-ta nodded. "Yes," he agreed, "I have heard of strangers who excited the wrath of Kondaro." His eyes narrowed speculatively. "Those of the faithful who keep watch on such unfavored beings are rewarded by the priests, I am told."

Ladro nodded. "I believe that is correct," he agreed. "We should be watchful for impiety in any event." He stretched. "Well, I think I shall take a short nap before dinner."

Below, the traders' quarters were cramped. There was a small, common space, with a table, over which hung the single light. About the bulkheads were curtained recesses, sufficiently large for a bunk and with barely enough space for the occupant to stand. Musa closed the curtains, and sat down on his bunk.

Of course, he had no proof. There was no really logical sequence to prove that the situation was dangerous. There was no evidence that his fellow voyagers were other than honorable, well-intentioned men. But he simply didn't feel right. He pulled his wooden chest from under the bunk, opened it, and looked through the small store of personal effects.

There was no weapon. The law of Kondaro forbade the carrying of those by other than the priests and their slaves. His attention was attracted by a glitter, and he picked up the small amulet he had bought from the peddler in Norlar. Slowly, he turned it in his hands.

It was an unusual ornament, strangely wrought. He had never seen such fine, regular detail, even in the best handicraft. As he looked closer, he could not see how it could have been accomplished with any of the instruments he was familiar with, yet it must have been hand made, unless it were actually of supernatural origin.

He remembered the urgent seriousness of the peddler's attitude, and he could recall some of his words. The man had spoken almost convincingly

of powerful protectors, and Musa could foresee the need of such. He found himself speaking.

"Oh, power that rests in this amulet," he said, "if there is any truth in the peddler's words, I—" He paused, his usual, hard, common sense taking over.

"I'm being silly!" He drew his hand back to throw the ornament into the chest. Then, he felt himself stopped. An irresistible compulsion seized him, and he dazedly secured the amulet about his neck. Feeling sick and weak, he tucked it into his garments. Then, still moving in a daze, he left the cabin and returned to the deck. He did not so much as try to resist the sudden desire.

The breeze made him feel a little better, but he was still shaken, and his head ached violently. Little snatches of undefined memory tried to creep into his consciousness, but he couldn't quite bring them into focus. He turned toward the rail, and saw Min-ta still there.

"Well," commented the easterner, "your accounts didn't take long."

Musa smiled wanly. "It was stuffy down there. I felt I had to come up for some air."

Min-ta nodded. "It does get close in the quarters during the day." He pointed alongside.

"We are favored still," he said. "Another kontar has joined us."

Two of the great fish paced the ship, gliding and leaping effortlessly from wave to wave. Musa watched them.

"We must be favored indeed."

"Yes." Min-ta smiled. "May our favor last."

Musa's head still ached, and the glints of the sun reflected from the water made it worse. He looked aft, to the faint line where sky met water. There was a low line of clouds. His gaze traveled along the horizon, and he noted that the clouds seemed a little darker forward. Still, he felt uneasy, and alone.

"See what I meant?"

"Ooh! Yeah. Yeah, I see. What a backlash that was! I've got the grandfather of all headaches, and I won't be able to think straight for a week. Wonder how Musa feels—But I got results, anyway."

"Yes. You got results. So did I once, when I tried something similar. But I'll live a long time before I try it again. How about you?"

"Don't worry. Next time I try to exert direct mental control on another entity, this planet'll have space travel. Wonder if some klordon tab-lets'll help any."

"Might. Try one, then let's get busy and scatter a few more communicators around that ship. Be more practical than beating our brains out."

As the days passed, Musa became familiar with the shipboard routine and lost some of his early uneasiness regarding his traveling companions. He became acquainted with other traders, finding them to be average men, engaged in the same trade as himself. He talked to members of

the ship's company, and found them to be normal men, who worked at their trade in a competent manner. Only the four priests held aloof. Ignoring officers, sailors, and traders alike, they spoke only to their slaves, who passed their comments to the ship's company.

On the morning of the tenth day, Musa came to the deck, to find the sea rougher than usual. Waves rose, scattering their white plumes for the wind to scatter. Ahead, dark clouds hid the sky, and occasional spray came aboard, spattering the deck and the passengers.

Just outside the cabin entrance, a small knot of traders were gathered. As Musa came out, they separated.

Musa went over to the rail, looking overside at the waves. The two kontars were not in sight. He looked about, noting the sailors, who hurried about the deck and into the rigging, securing their ship for foul weather. Close by, Ladro and Min-ta were talking.

"It is quite possible," said Ladro, "that someone aboard has broken a law of the great Kondaro, and the kontars have gone to report the sin." He glanced at Musa calculatingly.

"Yes," agreed Min-ta, "we—"

An officer, hurrying along the deck, stopped. "All passengers will have to go below," he said. "We're in for bad weather, and don't want to lose anyone overboard."

"Could this be the wrath of Kondaro?" asked Ladro.

The officer glanced at him questioning. "It could be, yes. Why?"

Again, Ladro cast a look at Musa, then he caught the seaman by the arm, pulling him aside. The two engaged in a low-toned conversation, directing quick glances at Musa. At last, the officer nodded and went aft, to approach one of the slaves of Kondaro.

Musa started across the deck to the ladder, his heart thudding painfully. Surely, he thought, he had done nothing to offend even the most particular of deities. Yet, the implications of Ladro's glances and his conversation with the ship's officer were too obvious for even the dullest to misinterpret. Musa took a long, shuddering breath.

His fears on that other day had been well grounded, then.

He gazed at the lowering sky, then out at the waves. Where could a lone, friendless man find help in this waste of wind and water?

Slowly, he climbed down the ladder leading to his tiny cubicle.

Once inside, he again started checking over his personal items. There was nothing there to help. Hopelessly, he looked at the collection in the chest, then he got out a scroll of prose and went to the central table to read in an effort to clear his mind of the immediate circumstances.

Minutes later, he went back to his bunk and threw the scroll aside. Possibly, he was just imagining that he was the target of a plot. Possibly there was a real sea god named Kondaro—an omnipotent sea deity, who could tell when persons within his

domain were too curious, or harbored impious thoughts, and who was capable of influencing the actions of the faithful.

Possibly, his opinions of the priesthood had been noted and had offended. Or, perhaps, that peculiar little device he had seen a priest studying was capable of warning the god that it had been profaned by an unsanctified gaze. Possibly, this storm was really the result of such a warning. He was sure the priest hadn't seen him, but it could be that the device itself might—

Musa threw himself on his bunk.

A deep voice resonated through the room.

"Musa of Karth," it said, "my master, Dontor, desires your presence on deck."

Musa came to his feet. Two of the slaves of Kondaro stood close by, swords in hand. One beckoned, then turned. Musa followed him into the short passage, and up the ladder. As they gained the deck, the small procession turned aft, to face the senior priest.

Dontor stood on the raised after deck, just in front of the helmsman. The wind tugged at his gold and crimson robe, carrying it away from his body, so that it rippled like a flag, and exposed the bright blue trousers and jacket. Dontor, chief priest of the *Bordeklu*, stood immobile, his arms folded, his feet braced against the sway of his vessel. As the trio below him stopped, he frowned down at them.

"Musa, of Karth," he intoned, "it has been revealed to me that you have displayed undue curiosity as to the inner mysteries of the worship of the Great God. In your conversations, you have hinted at knowledge forbidden any but the initiated.

"You came to us, a stranger, and we trusted you. But now, we are all faced with the wrath of the Great One as a result of your impieties. A sacrifice, and only a sacrifice, will appease this wrath. Can you name any reason why we should protect you further, at the expense of our own lives? What say you?"

Musa stared up at him. The cotton in his throat had suddenly become thick, and intensely bitter. Unsuccessfully, he tried to swallow, and a mental flash told him that whatever he said, he was already convicted. Regardless of what defense he might offer, he knew he would be condemned to whatever punishment these people decided to deal out to him. And that punishment, he realized, would be death. He straightened proudly.

"Oh, priest," he said thickly, "I am guilty of no crime. You, however, are about to commit a serious crime, which is beyond my power to prevent." He hesitated, then continued. "Be warned, however, that if there are any real gods above or below, you will receive punishment. The gods, unlike men, are just!"

Aware of sudden motion in his direction, he rapidly finished.

"So, make your sacrifice, and then see if you can save your vessel from

the natural forces of wind and water."

The priest stiffened angrily.

"Blasphemy," he said. "Blasphemy, of the worst sort. He looked away from Musa. "I believe that in this case, the Great One will require the ship's company to deal with you in their own way, that they may be purged of any contamination due to your presence." He raised his arms.

"Oh, Great Kondaro, Lord of all the seas, and the things within the seas," he began.

Musa evaded the two slaves with a quick weave of his shoulders. Covering the distance to the side of the ship with a few quick steps, he jumped over the rail. As he fell, the wind tore at him, and his windmilling arms and legs failed to find any purchase to right him.

He hit the water with a splash and concussion that nearly knocked the breath from his body, and promptly sank. As the water closed over his head, he struck out with hands and feet in an effort to climb again to light and air. His head broke the surface, and he flailed the water in an effort to keep his nose in air. The ship was drawing away from him, its storm sails set.

As he struggled in the water, he wondered if it was worth while. After all, he had only to allow himself to sink, and all his trouble would be over shortly. Wouldn't it be easier to do this than to continue torturing himself with a hopeless fight?

Too, he wondered if he had been right in leaving the ship, but he

quickly dismissed that thought. The sea was impersonal, neither cruel nor kind. It was far better, he thought, to surrender to the forces of nature than to subject himself to the viciousness of angry men.

Suddenly, a constraining force seized him. He instinctively fought to free himself, then realized that he was being drawn upward, out of the water. Possibly, he thought, the Great One wanted to speak to him.

He rose swiftly through the air, passed through complete darkness for an instant, then found himself in a small room. Two men stood facing him, both of them vaguely familiar. As his mind refocused, Musa recognized the peddler of amulets, then the herder to whom he had once sold a sword. They were strangely familiar, but they were in strange costumes. He stared at them.

"Well, Musa," said the herder. "I see you got into trouble."

Musa blinked. "Who are you?" he demanded. "How do you know of my affairs?"

The peddler of amulets grinned. "Why, we are old companions, Musa," he said. "Of course, you have forgotten us, but we never forgot you." He pointed.

"This is Resident Guardsman Lanko. I am Banasel, also of the Stellar Guard. Our job is to prevent just such situations as the one you just found yourself in." His grin faded. "That, and a few other things."

Musa frowned. "Stellar Guard? What is that?"

Lanko studied him for a moment, then crossed the small room. "You knew once," he tossed over his shoulder, "but you rejected the knowledge, and it had to be taken from you. Since you'll be working with us for a while, I think we will have to restore your memories. Perhaps you'll want to retain them." He removed equipment from a cabinet.

"Some of this will have to be secondhand, since neither Banasel nor myself have been in the spots shown. But some of it is firsthand."

His hand flicked a switch.

A power unit hummed, and Musa found himself recalling a campsite near the now destroyed and rebuilt city of Atakar. As the imposed mental blocks fell away, he remembered who Banasel and Lanko were. And he realized why he had been drawn to them in the recent past.

Memories of his days of slavery in Atakar flashed before his mind, and he remembered the part these two had taken in his escape. He recalled the days of banditry, and the strange visitors, who had brought with them disturbing knowledge, and strange powers.

He saw the destruction of Atakar, and the capture of the galactic criminals who had depraved that city. He shared the experiences of his two companions during their introduction to the advanced culture of the Galactic Federation, and he saw snatches of their training at Alde-

baran Base. He went with them on some of their missions.

The humming stopped, and he looked up at the two.

"So," Lanko told him, "now you know."

Musa nodded. "I turned something down, didn't I?"

As Musa disappeared over the vessel's side, the priest, Dontor, lowered his arms. Quickly turning the unscheduled event to advantage, he cried, "We need worry no further, my children. The Great One has called this blasphemer to final account."

He turned to one of his juniors, lowering his voice.

"Go below, Alnar, and break out this man's goods. We must reward those who informed us."

The junior bowed. "Yes, sir." He hesitated. "Will this storm blow over soon?" he queried.

Dontor smiled. "You should have paid more attention to your course in practical seamanship," he chided. "We are sailing fairly close hauled, so our speed is added to that of the wind. And, since storms move, it'll pass us shortly." He pointed to the horizon.

"See that small break in the clouds? That indicates a possibility of clear weather beyond. We should be through the worst of the storm in a matter of a few hours. And we'll never reach the really dangerous core of the storm, for we are passing through an edge of it. Our only problem is to keep from losing a

mast during the time we are close to the storm's heart." He paused, looking aloft.

"The crew is competent. They have the sails properly reefed, and, if necessary, they can furl them in short order. What trouble can we have?"

"Thank you, sir." The younger priest bowed again. "I will make the necessary arrangements for those goods."

Dontor stood for a moment, surveying the ship, then walked toward the helm.

"If I am ever in charge of operations," he told himself, "I will replace some of these sailors by neophyte priests, and let them steer by their own compasses. This method is too cumbersome. Besides, the neophytes should get to sea earlier, anyway."

He approached the pilot priest, who stood apart from the helmsman, his slave holding the little red box with the compass.

"How is our course?"

The priest turned, then bowed. "We are off course twelve degrees to the north, sir," he reported. "I have instructed the helmsman to come as close to the wind as possible."

Dontor nodded. "Very good," he approved. "Keep track of your time, and we'll correct when we get a chance to shift course to the south. We can determine whatever final correction is necessary at noon sight tomorrow."

Alnar came up the ladder to the

quarterdeck. Approaching Dontor, he bowed in salute, then reported.

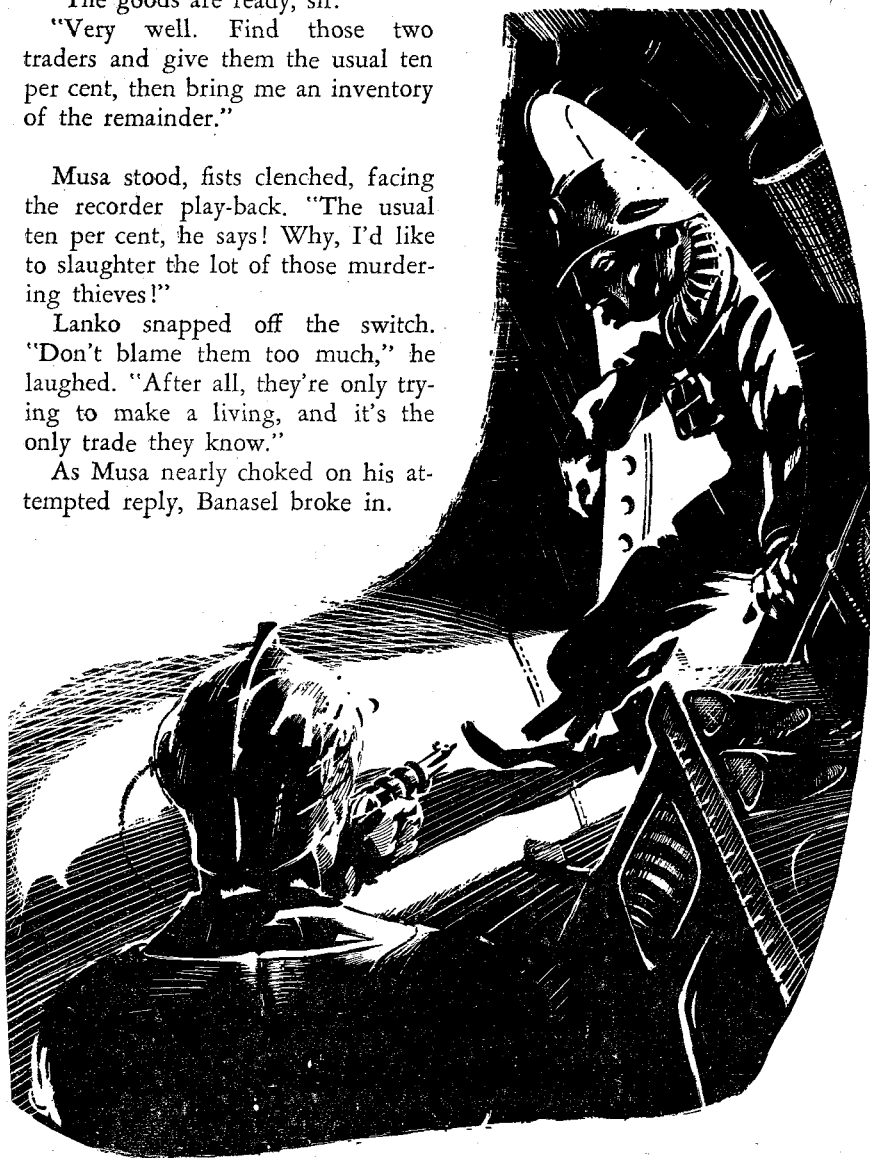
"The goods are ready, sir."

"Very well. Find those two traders and give them the usual ten per cent, then bring me an inventory of the remainder."

Musa stood, fists clenched, facing the recorder play-back. "The usual ten per cent, he says! Why, I'd like to slaughter the lot of those murdering thieves!"

Lanko snapped off the switch. "Don't blame them too much," he laughed. "After all, they're only trying to make a living, and it's the only trade they know."

As Musa nearly choked on his attempted reply, Banasel broke in.



"Sure," he chuckled. "Besides, it's guys like them that keep guys like us in business."

Lanko noticed the horrified expression on Musa's face, and quickly composed himself. He put his hand on the man's shoulder.

"Look," he explained seriously, "if we got so we took people like these to heart, we'd spend half our time getting psyched to unsnarl our own mental processes." He gestured to the reels of tape in a cabinet.

"Here, we have the records of hundreds of cases like this one. Some are worse, some are not so bad. Every one of them had to be—and was—cracked by members of our Corps. This is just another of those minor, routine incidents that keep cropping up all over the galaxy. It's our problem now, and we'll get to work on it." He turned.

"Where do you want to start, Banasel?"

"Well—competition's the life of trade."

"That comes later." Lanko shook his head. "There's an alien or so to be taken care of first, you know."

"I know. It's fairly obvious."

"So, we've got to find him—or them."

Musa had regained his self-control. "What about these birds in hand?"

Banasel shrugged. "Small fry. We'll take care of them later." He walked over to the workbench, picking up Lanko's sword.

"I wondered about this before," he said. "Now, I'm sure about it. It

simply doesn't match a normal technology for this period."

Musa looked at him curiously. "But there are a lot of those around Norlar," he said. "They're a rarity in the Galankar, to be sure, but—"

"That's what we mean," Lanko told him. "Too many anachronisms. First, we have this sword. Then, we meet these priests of Kondaro, who discuss meteorology, navigation, and pilotage with considerable understanding. We've had communicators planted on that ship for several days now, and I still can't see how the technology was developed that allowed the manufacture of some of their instruments. We should have noticed something wrong a long time ago."

"The priests use sextants, watches, compasses. And, just to make it worse, we have one video recording of a priest laying out a course on an accurate chart. He was using a protractor, which was divided into Galactic degrees. That was the clincher. Somebody's out of place, and we've got to find him—or them."

He took the sword from Banasel. "I think we'd better go on to the eastern continent, see what we can find, then we can deal with our friends. But first, Ban, you'd better run out a call for one of the Sector Guardsmen to back us up if necessary. We could run into something too hot for us to handle."

Banasel nodded and turned to the communicator. Lanko dropped into the pilot seat, glanced at the

screens, and moved controls. In the viewscreen, the sea tilted, drew farther away, then became a level, featureless blue expanse.

"Well, here's your eastern continent. In fact, this is the city of Kneuros. It's where you wanted to go, isn't it?"

Musa looked at Banasel thoughtfully.

"Yes," he admitted. "It's where I thought I wanted to go, but now I really know what I wanted in the first place."

"Oh?"

"Certainly. I was restless. I thought I liked being a trader in Karth, and I was a fairly good trader, too. But I was just getting things at secondhand. I turned down just what I really wanted, because it scared me. That was a long time ago." He looked at the control panel. He'd understood such panels once, some years ago.

"How do you plan to find your aliens—if there are any?"

"Search pattern." Lanko shrugged. "We'll cruise around in a grid pattern until we pick up some sort of reading, or until we spot something abnormal." He pointed at a series of instruments.

"They're bound to have a ship somewhere, and we'll pick up a small amount of power radiation from their screens. If their ship were orbiting in space, we'd have picked it up long ago, so we must assume it's grounded. I think we'd better go right into a pattern. We can use

Kneuros as origin." He stared at the plotting instruments.

"Let's see. If I wanted to hide a ship, I'd use the most inaccessible location I could find. We do that ourselves, in fact. And there are some mountainous regions inland." He set up course and speed.

"Yeah," Banasel added, "and I'd worry a lot more about ground approach than air accessibility, at least on this planet."

The ship gained altitude, accelerated, and sped eastward.

Day by day, the course trace built up, the cameras recorded the terrain under the ship, and the two guardsmen built up their mosaic. The ship crossed and re-crossed the continent, mapping as it went.

From time to time, Lanko made careful comparison of the new mosaic with an earlier survey, noting differences. There were new settlements. Where members of a nomadic culture had roamed the prairie, an industrial civilization was rapidly growing.

Lanko tapped on the map. "Two cultures," he observed. "Two cultures, separated by mountains and desert. Absolutely no evidence of contact, but considerable similarity between them. This pattern begins to look familiar."

He picked a tape from the shelves, ran it through a viewer, then reversed it, and picked out various portions for recheck. Finally, he made a superposition of some of their observation tape, examined it, and turned. Banasel held up a hand.

"Don't tell us," he growled. "I studied about drones, too."

"Drones?" Musa looked at him, then glanced back at the viewer.

"Yes. Characters from one of the advanced cultures, who feel frustrated, and fail to fit in. They often turn into pleasure seekers, and frequently end up by monkeying with primitive cultures, to prove their ability to themselves, at least."

"Things like this happen often?"

"Oh, not too often, I suppose, but often enough so that people like us are stationed on every known primitive planet, to prevent activity of the type. You see, the drones usually start out simply, by setting up minor interference in business or government on some primitive planet. Usually, they're caught pretty quickly. But sometimes they evade capture. And they can end up by exerting serious influence in cultural pattern. Some planets have been set back, and even destroyed as a result of drone activity. Although their motives are different, drones're just as bad and just as dangerous as any other criminal."

Lanko grinned a little. "Only difference is, they're usually easier to combat than organized criminal groups with a real purpose. Generally, they're irresponsible youngsters who don't have the weapons, organization, or ability that the real criminals come up with." He shrugged.

"Of course," he added, "we've called for help just in case. But we'll probably be able to take care

of this situation by ourselves. In fact, unless there are unusual features, we'd better, if we don't want to be regarded as somewhat ineffectual." He paused, glanced toward the detector set, and tapped on the map again, then slowly traced out an area.

"We should be picking up something pretty soon," he said, thoughtfully. "Better set up a pattern around here, in the mountain ranges, Banasel. We can worry about settled areas later."

A needle flickered, rose from zero, then steadied.

Somewhere, back of the instrument panel, a tiny current actuated a micro relay, and an alarm drop fell.

As the warning buzz sounded, both Lanko and Banasel looked over at the detector panel.

"Well, it's about time." Lanko leaned to his right, setting switches. A screen lit up, showing a faint, red dot. He touched the controls, bringing the dot to center screen, then checked the meters.

"Not too far," he remarked. "A little out of normal range, though. He must have all his screen power on."

Banasel turned back to the workbench, studied the labels on the drawers for a moment, then opened one.

"Guess we'll need a can opener?"

"We might. If he's aboard, we may have to get a little rough." Lanko leaned back.

"Check the power pattern. Sort

of like to know what we're running into before we commit ourselves." He glanced again at the indicators, then poked at switches.

"In fact, I think we'd better wait right here, till we get this boy identified."

Banasel was whistling tunelessly as he set up readings on a computer. Finally, he poked the activator bar, and watched as the machine spat out tape. Above the tape chute, a series of graphs indicated the computations, but Banasel ignored them, feeding the tape into another machine.

"I suppose there are some characters who could make a positive identification from the figures and curves. But I'm just a beginner. That's why they furnish integrator directories, I guess."

Lanko smiled. "I don't know anything, either," he agreed. "But I generally know where I can look up what I need." He set a compact reel of tape into the computer.

They watched the directory as its screens glowed. Figures and descriptions shimmered, and there was a rapid ticking. A sheet flowed out toward them, and Banasel tore it off as the ticks ceased.

"Type seventeen screens," he read. "Probably Ietorian model Nan fifty-seven generators. Strictly a sportster setup. He's got electromagnetics and physical contact screens, but there's nothing else. And, with the type of readings I've got here, I'd say he's running all the power he's got. Do we go in?"

"Sure we do." Lanko nodded con-

fidently as he slapped the drive lever.

"This thing we've got's only an atmosphere flier, but it's made to take care of tougher stuff than luxury sportsters. Set up your can opener, just in case our boy wants to argue with us."

Banasel nodded silently.

The small sportster was parked between two peaks. Before it was a tiny level space, too small for any ship. Above it, towered bare rock, tipped with eternal snow. Lanko examined the scene disgustedly.

"Inhospitable, isn't he?" he grunted. "He could at least have had enough front yard for a visitor to land." He picked up a microphone, touched a stud, and turned a knob. A faint hiss sounded from the speaker before him.

"Philcor resident calling sportster," he snapped. "Come in, Over."

The hiss continued. Lanko punched another stud, and listened. The hiss remained unchanged.

"Open him up, Banasel," he finally ordered. "I'm going in."

He rose from his chair, crossing to the exit port. For an instant, he stood, checking his equipment belt. Then, he reached to a cabinet, to pick up a tool kit. He opened the box, examined its contents, then turned and nodded to Banasel.

The port opened wide, and he stepped through.

He dropped lightly to the space before the sportster, then stepped away, crouching behind a rock out-

crop, and turned his body shield to full power.

"Screens down," he ordered.

A faint haze grew about the sportster. At first, it was a barely perceptible fluorescence. Then, it became a fiercely incandescent glow. It flamed for a few seconds, then faded, becoming green, yellow, red, and at last, blinking to invisibility.

"They're damped," Banasel's voice announced. "Shall I give him some more and knock out the generators?"

"Not necessary," Lanko told him. "Just hold complete neutralization. I'll cut them from inside."

He rose from his position behind the rock, idly kicking at the face of it as he walked past. A shower of dust crumbled to the ground.

"Good thing there aren't any trees around here," he laughed. "We'd have to put out a forest fire."

He pulled his hand weapon from his belt, made a careful adjustment, then walked over to the ship. After a quick examination, he directed the weapon toward a spot in the hull.

"Lot of credits here," he commented laconically. "Shame to hurt the finish too much."

A few minutes later, he stepped back, examining his work. Then, he nodded and removed another instrument from his tool kit. He focused it on the ship's port, flicked a switch on his belt, then snapped the instrument on.

For a few seconds, nothing happened, then there was a grinding

screech of tortured metal, and the port swung open.

As Lanko stepped inside, he examined the control room with care. At last, satisfied that no booby traps were set, he crossed to the control panel. He located the communicator controls, and picked up the microphone.

"All's well, Ban," he reported. "Ease off."

He watched as the overloaded generator recovered. When the needles were at normal readings, he flicked the screen controls off, then picked up the microphone again.

"Haul out, Banasel," he ordered. "I'm going to fix this can up again, close the port, run up the screens, and wait for our boy to come home. Like to talk to him."

The sportster had a well stocked galley. Lanko ate with enjoyment, studying the tapes he had found interestedly. Finally, he pushed the last reel aside, then sat back to gaze at the wall.

A low tone sounded, and the viewscreen activated. Lanko nodded to himself, then went to the control room aperture, turning off the alarm as he went through. A few strides took him to the entry port, where he waited, weapon in hand.

The door swung open and Lanko touched his trigger. The newcomer's screen flared briefly, then collapsed. Lanko stepped forward, examining his prisoner.

He was humanoid. There were some differences from the usual type

encountered on the planet, but they were not serious. He could have passed in most of the Galenkar, if not anywhere. Some might even be attracted by his slightly unusual appearance. Lanko drew him into the ship, and closed the port.

He took his time, making a complete search of the captive's clothing, and removing equipment and weapons. At last, he drew back, satisfied that the being was harmless. He waited. It wouldn't be too long before the business could begin.

As the paralysis effect wore off, the man on the floor flexed his muscles, then got to his feet. Lanko watched him, his weapon resting on his knees. As the man tensed to spring, Lanko raised the weapon a little.

"You are Genro Kir?"

"Who are you? What's the idea?" Kir reached for his belt, then dropped his hand again as he found nothing there.

"Resident Guardsman. Name's Lanko. You seem to be a little out of place on this planet."

"I'm not responsible to some native patrolman." Kir's face became stubborn. "I'm a Galactic Citizen."

"Possibly. We'll leave that to the Sector authorities." Lanko shrugged, his face expressionless. "Meantime, you'll have to accept things as they are. Or would you rather be paralyzed again?"

Genro Kir tensed again, making an obvious mental effort.

Lanko grinned at him in real amusement. "I took it. Wouldn't do

you much, good anyway. They gave me heavy-duty equipment, you know." He waved toward a chair with his weapon. "Might as well sit down and talk about it. I've been through your tapes, of course."

Kir looked around unhappily, then sank into a chair. "What's there to talk about, then? You know what we were doing."

"In general, yes, we do. A good deal was on your tapes. But we need more detail, and we've got to pick up your companions, you know. It would be a lot better if we knew where they were."

"I don't know where they are myself. They're building up their forces, and working for position. This is just the opening, you see. The real game won't start for quite a while."

Lanko laughed shortly. "Frankly, I don't think it will start. But it would make it simpler for all concerned if you'd help us find the players."

"I told you. I don't know where they are. They don't have to tell the referee every move they make, unless they want a consultation as to legality. I was just keeping watch on the general picture, to see that neither of them broke a rule, or took an unfair advantage."

"You may not know where they are," Lanko admitted, "but you can certainly contact them."

Genro Kir smiled tightly. "But I won't."

"They'll be hunted down, you know. We'll have them eventually.

Be a lot easier for all concerned if you'd cooperate."

"Coöperate with a bunch of half savage natives, against my own friends? Don't be more stupid than you have to be!"

"I see." Lanko glanced away. "All very ethical, of course. Well, in that case, we'll have to go to work." He pulled a fine chain from a case at his belt, and walked over to his captive, weapon ready.

"Just hold still," he ordered. He slipped the delicate looking necklace over the man's head, squeezed the pendant, and jumped back.

"I don't know whether you're familiar with this device," he said, "so I'll explain it to you. It's a type ninety-two gravitic manacle, and is designed to hold any known being. You can move about freely, so long as you don't make any sudden or violent motion. The device is keyed to my shield, and you'll suffer temporary paralysis if you get within my near zone. You're safe enough a couple of meters from me." He walked back to the control console.

"Oh, yes," he added, "don't try to take it off. It's designed to prevent that action by positive means. It won't do you any permanent damage, but it can make you pretty uncomfortable. And, remember, if it becomes necessary, I can activate the manacle. It'll put you into full paralysis and send out a strong homing signal."

Genro Kir looked at him sourly. "I won't try to escape," he promised.

"That's immaterial to me." Lanko flicked switches and the ship rose from the ground, swung, and started westward. "I was merely describing the capabilities of the manacle."

On the way over the sea, Lanko noted the positions of a few of the trading ships, and approached them closely, examining them. As he approached a small archipelago, his communicator screen brightened.

"Resident Guardsman to Sportster. Identify yourself. Over."

Lanko picked up the microphone. "It's all right, Ban. Got one. Two more to go."

"Fair enough. Come on in. I've got a beam on you."

Lanko checked the approach scope. The small circle was a trifle out of center. He touched the control bar, and as the circle centered, he snapped a switch and sat back.

The sportster dipped over an island, crossed a narrow lagoon, and settled to the ground beside the guard flier. Lanko started pulling tools from his kit. Working carefully, he removed the cover from the control console, examined the terminal blocks, then attached a small cylinder between two terminals.

He closed the console again and walked over to the exit port, where he pressed the emergency release. The port swung wide. For an instant, the control console was blurred. Lanko waited, then as the panel returned to focus, he walked back to it. He snapped the drive switch on and pushed the drive to

maximum. Nothing happened. He punched the emergency power button, and waited an instant. There was no result. He nodded to his prisoner.

"Come on, Genro Kir. We may want you to talk to someone." He pointed to the port. Kir hesitated, then went through. He managed a sneer as he did so. ●

The port of the flier opened, and Banasel looked out. "Need any help?"

"No. This spaceship won't fly till someone from Sector comes out to pull the block." Lanko pointed. "This is Genro Kir. He was refereeing a sort of battle game between a couple of his companions."

Lanko herded Kir in front of him, and entered his own flier. He placed the equipment kit on a shelf, and sat down. Banasel perched on his workbench.

"What kind of a setup did these jokers have?"

"Well, you can review the tapes later and get a few of the details, but here's the general idea:

"Genro Kir and his two companions made planetfall some years back. They didn't know it was a discovered planet, and failed to note any evidence of our presence. Somehow, we missed them, too, for which we should hang our heads.

"Anyway, they checked the planet, found it was suitable to their purpose, and decided that Koree Buron and Sira Nal could use it as a playing board. Seems they had a bet on, and their last game was in-

conclusive. Both of the involved civilizations collapsed.

"Each of them selected a portion of the habitable part of the eastern continent as a primary base. Buron took the east, and that left the west to Nal. It so happens that the central portion of the continent is difficult to pass, and that fitted in with their plans. You remember the desert and mountain ranges, of course? Well, so far as I can discover, there was virtually no contact before the arrival of these three prizes of ours. And after their arrival, they made sure that there would be no contact—not until they wanted it.

"Of course, deserts can be crossed, and mountains can be climbed, but our three boys fixed it so it would be fatal for any native to try it. Then, each of the two contestants set to work to build up the war potential of his part of the continent.

"In the meantime, Genro was acting as referee. He's been checking the progress of the two contestants, and making sure that neither of them sneaks into the territory of the other to upset something, or commits any other breach of rules."

Banasel slid off his bench. "Atmosphere of mutual trust, I see."

"Precisely."

"Where do the Kondaran priests come in?"

"Oh, those two aren't going to confine the final stage of their game to the one continent. That's just the starting point—the home base. And what they're doing now is just the opening of the game. The end game

will decide control of the entire planet. Sira Nal's just getting off to an early start, that's all."

"This is legitimate, according to their rules?"

"I guess so. According to Kir's tapes, he thinks it's a clever maneuver. 'Sound move' is the way he expressed it." Lanko stood and walked over to the reproducer set. "That all came from the tapes, of course."

"How much more has Kir told you?"

"As little as possible."

Banasel looked toward the prisoner. "Why not cooperate? You're due for Aldebaran anyway. And a little help now would make it easier for you and your partners later."

Genro Kir's lip curled. "As I told your friend, I don't have to lower myself to work with a bunch of low-grade primitives."

"See what I mean?" Lanko slanted an eyebrow at Banasel. "But I think our friend here will help us some, anyway. That 'sound move' he recorded is almost sure to catch us one of the players."

"Oh?"

"Sure. What's the whole foundation of this cult of Kondaro?"

"Why, they navigate ships. They keep strict security on their methods. They enforce that security by terrorism. They claim that no one else can successfully cross the Great Sea, and it seems to be a proven fact that they're right. So, they collect from seamen, traders, and shipowners."

"That's right. And they claim that

only they can overcome the spells and actions of the sea demons, which try to destroy any ship that sails the sea. First, though, they navigate ships. They guarantee to get 'em across the sea and back. Right?"

Banasel nodded.

"Suppose they start losing ships? Suppose that from now on, no ship returns to port?" Lanko walked over to the control console.

"Hey, wait a minute. I know these priests are a bunch of pirates—or some of them are, at any rate. But we can't—"

"Who said anything about destroying life?" Lanko spread his hands. "We have here a fairly nice group of islands," he pointed out. "Not too spacious, of course, and not possessed of any luxurious cities. But there's water, and fresh fruits are available in plenty. The ships are provisioned fairly well, but they generally put in here for those very fruits. So, all we need do is give a little unwanted help."

"Shipwreck?"

"Something like that."

Banasel shook his head doubtfully. "It'll take a long time to undermine their reputation that way," he objected. "And we'd have a lot of people on these islands before we were through."

"I don't think so. Kondaro's a god, remember? And gods are infallible. Sira Nal can explain a few disappearances by accusations of irreverence, but he'll know better than to try explaining too many that way. I should imagine that the nor-



mal losses due to unexpected storms just about use up his allotment along that line."

Lanko shook his head. "No, Sira Nal's going to have to do something to prevent any rumor to the effect that the sea god is losing his grip." He paused. "And what ship do you think I spotted standing this way?"

"Oh, no! That's too much of a coincidence."

"No, not really. We took considerable time gathering in our boy here." Lanko inclined his head toward Genro Kir. "And the *Bordek-lu's* home port is Tanagor, so Musa's old ship wouldn't spend too much of a layover in Kneuros. They're on schedule all right. You'd like to see your old friend, Dontor, again, wouldn't you, Musa? Sort of watch him try to save his ship in a real emergency?"

Musa grinned wolfishly. "Might be fun, at that," he agreed.

Dontor strode firmly toward the ladder leading to the observation deck. The slaves had rigged the screen, and the priest looked proud-

ly about this ship of which he was the actual and absolute master. Slowly, in majestic silence, he mounted the ladder and passed through the opening in the curtain.

He went to the middle of the forecabin, and stopped, waiting until the two junior priests had taken their positions near him and the slaves had set down the equipment chests. The slaves straightened, and stood, arms folded, waiting. Dontor

inspected the area, then moved his head imperiously.

"Very good," he said. "Take your posts."

As the slaves left, the three priests opened their instrument chests, removing navigational tools. Alnar went to the folding table, spread the chart over it, then took his watch out of the chest and stood back, holding it.

"Just about time, sir."

"Very well." Dontor glanced at the juniors, saw that Kuero had his sextant ready, and raised his own.

"Now," he instructed, when the readings were complete, "you will each calculate our position independently. I'll check your work when you have finished." He replaced his sextant in its case, then headed the small procession back to the cabins.

The ship's routine continued its uneventful course. The junior priests reported to Dontor with their calculations. Their work was examined, criticized, and finally approved. They were given further instructions. All was well aboard the *Bordeklu*.

The chief priest examined the charts and decided on the course for the next watch. The ship, he thought, would have to put in for water. And some of the island fruits would go well on the table. He set a course accordingly, and went topside to give instructions to the pilot.

"Are you going to help them on their way?"

"It's not necessary, unless they start to by-pass the island. They'll

have plenty to worry about when they try to anchor."

Ahead of the ship, the sea was calm. No cloud marred the bright blue overhead. Slowly, a vague shape formed on the horizon, then it grew, to become a small, wooded island.

The ship continued on its course, approaching the bit of land, and neared the breaker line. Orders sounded sharply, and the sails collapsed, spilling their wind. A crew forward cut the snubbing line, and the bow anchor splashed into the water.

The ship continued, and the anchor cable became taut. In defiance of the helmsman's efforts, the ship continued on a straight course. The bow line stretched, then loosened a little, as the anchor dragged. Still, the ship refused to swing. Hurriedly, the crew aft dropped the stern anchor. But the ship persisted on its course. All hands forward took shelter as the bow cable snapped and whipped viciously across the deck. The ship maintained its slow progress.

Frantically, the crew backed the sails, hoisting them to take all the wind possible. The helmsman spun the wheel in a final effort to turn the ship back to sea, then cast a glance astern at the taut cable, and ducked for shelter.

Sea anchors were hastily thrown overside, but still the ship approached the beach. The keel grated on sand, and the ship continued to move forward, as though, tired of

the sea, it had decided to return to the forest. At last, wedged among the trees, the vessel stopped, far above the sands of the beach.

It was obviously there to stay.

Dontor stood, looking seaward. He shook his head, looked forward, then down at the ground beneath the ship. This was outside his experience. It was also outside the teaching so carefully instilled in his mind in the classrooms back at Tanagor, and later during those long days and nights when he was a junior priest. He had been taught to speak of sea demons, and to explain their actions, but he had not been told to believe in them.

He wondered if the great Kondaro really existed, and if he did, just what he might think of Dontor and of the ship he had so recently controlled. The thought crossed his mind that a real god might be somewhat critical of the priesthood of the sea.

"Something," he mused aloud, "will have to be done to prevent loss of faith."

"Well," remarked Lanko as he snapped the tractor off. "That's the first handful of sand for the cook pot."

Sira Nal drummed impatiently on the table before him.

"I thought you could handle routine operations," he said bitingly. "Now, you tell me you've been missing ship after ship. What happened to them?"

The high priest shook his head. "We haven't been able to find out, sir."

"Do you mean to tell me you haven't anything to report on them?"

"We have sent out investigating ships, sir."

"And?"

"They haven't reported back, sir."

Sira Nal's cheeks paled slightly with rage as he stared at his underling.

"Miron," he snapped, "I'm not going to tell you exactly what to do, or how. You're supposed to know how to treat emergencies, not to call me any time something outside of routine happens. I want a report on those ships tomorrow morning." He glanced out of the window. "I don't care how you do it, but find out what happened, and I don't ever want to hear you admit again that you can't account for any ship I ask about. Is that clear?"

Miron nodded unhappily. "Yes, sir." He bowed and backed out of the room.

He forced himself to suppress his anger as he gently closed the door. Then, he stood for a moment, fists clenched, as he directed a furious gaze at the panels.

"How?" he thought. "How does he expect me to know what's going on at sea unless ships come in to give me information, or I am able to go out personally. And how does he expect me to make a personal check in one night?"

He started walking along the corridor. "I have no supernatural

powers, and he knows it. He's the prophet. Wish I'd never—"

He looked at the walls around him, then shook his head. No use thinking of that. None had ever successfully left the service of Kondaro. He continued to a stair, mounted it, then climbed ladders, to finally come out at the observation platform atop the temple. The observer bowed as his superior entered the little room just below the torch.

"Have there been any arrivals?"

"None, sir. I've seen no sails."

"I am going to send you an acolyte. If you see anything, send him to me immediately." Miron turned to go back to his quarters.

After Miron's departure, Sira Nal sat for a time, still staring at the closed door. He had caught the wave of frustrated rage, and had almost responded for a second. But, he was forced to admit, the priest had justification. He had organized his forces adequately—had been a useful piece, within his limitations.

"I wonder," mused Sira Nal, "if Buron's pulling a sneak punch." He tilted his head. "It would be a little foul, but he might try something like that." He reviewed the rules they had agreed upon.

After all, this phase of his operation was outside of the home zone, and he was actually vulnerable to attack, even this early. He had assumed that Buron would be too busy developing his own pieces to spend any time on an offensive move at this stage. Of course, direct interven-

tion was a little unethical, but Buron might try it.

He had thought his opponent would be too occupied to notice a move at this remote part of the board. And he had established this advance base by direct intervention, too. If Buron had noticed, and if he had checked Nal's methods, he might have felt justified, and have taken time for a quick, disruptive move. And Sira Nal was forced to admit that such a move might be allowed by Kir. It might be even approved, and hailed as a brilliant counter.

He rose to his feet, pacing about the room. If this were a move by Buron, the priesthood would be powerless to counter. It would take direct action by the player, of course. He grumbled to himself.

"Can't let this development be wasted. I'd lose too much time. I'll have to check personally."

He crossed to the window, opened it, and stepped out on the balcony.

Outside, the sun glinted on the harbor. A ship was standing out to sea, sails set to pick up the breeze from the headland. Sira Nal looked over toward the shipyards. It was a well organized secondary base, and it would probably develop into a highly valuable position. Somehow, he doubted that Buron would have been able to do as well, considering the time factor. He shook his head. This must be retained.

He threw the robe back, checked his equipment belt, adjusted his body shield, and stepped off the bal-

cony, activating his levitation modulator. He swung around the outgoing ship, noting the activity aboard with approval, then headed seaward, to follow the route he had prescribed for his navigators. Somewhere out there, he would undoubtedly find Buron, poised to strike at any ship which bore the red and gold of Kondaro.

And when he did find him, he knew, he would have to outline a counter move which would force immunity to his sea lanes. He considered the possibilities as he sped over the sea.

Musa sat before the detector, idly watching the vague patterns that grew and collapsed on the viewscreen. The scanner, Lanko had explained, picked up ghost images from heated air masses, or from clouds, but it discriminated against them, refusing to form a definite image unless a material body came within range. Then, it indicated range and azimuth, checked the body against the predetermined data, and the selective magnification circuits cut in.

As Musa watched, a sea bird appeared on the screen, outlined sharply against the darkness of the sea. The viewscreen tracked it for an instant, then continued its scan. Another body showed, seeming to come from under the sea. Musa looked at it curiously, then noticed that the range marks had tripped on. The screen was holding the object at center. A slight glow appeared,

obscuring visual detail, and more marks showed in the legend. Musa turned around.

"Banasel," he called, "what's this?"

Banasel was engaged in his usual pastime of tinkering with the equipment. He looked around, then walked quickly over to the screen, to make adjustments. The object came into sharp focus, revealing itself as a man in the robes of Kondaro. Range and azimuth lines became clearly defined, and a graph showed in the legend space. Banasel glanced down at the dials.

"Hey, Lanko," he called, "we've got a customer."

"Where?" Lanko came out of the mess compartment.

"About seventy-one, true, and coming in fast. Range, about a hundred K's." Banasel twisted dials, watching the result on the screen. "Looks as though our friend's coming in for a conference."

"Screens?"

"Personal body shield. Probably a Morei twelve. Nothing special."

Lanko got into the gunner's chair and punched a button. The sight screen lit, showing the approaching body clearly. He turned a knob, increasing magnification.

"All dressed up in his ceremonial robes, too," he laughed. "This kid could have done well as a clothing designer."

He adjusted a few knobs, examining a meter. Then, he reached for the weapon's grip.

"No point in discussing matters

with him now. He can talk after we get him in, and he's just about in range now." He brought the hairlines on the viewscreen to center on the approaching figure, and squeezed the grip.

Sira Nal felt the sudden pressure. Annoyed, he reached to his belt, to turn his shield to full power. This was highly unethical. Buron should certainly know better than to resort to personal attack. Such action could be protested, and Sira Nal could demand concessions.

He looked ahead, searchingly. The horizon ahead was broken by a faint cloud, which indicated the islands, but there was no evidence of his opponent. He shook his head, and started to rise, but his shield was failing. Suddenly, he became aware of the overheating generator pack. Something was decidedly wrong. He reached for his own hand weapon, still searching for his attacker. At last, he noticed a slight shimmer, dead ahead. He pointed the weapon.

"Now, now," cautioned a voice, "you could get hurt that way. Close down your shield and relax. This is a guard flier. You're in arrest tractor."

Sira Nal recognized that the tractor was pulling him ahead. His generator pack was heating up dangerously.

He was being captured!

Furiously, he thought of the attacks he had made in similar manner, in this same area. He still could

remember the horrified expression on one shipowner's face just before his ship broke to bits under him.

They wouldn't get him, though. They couldn't.

He would blast them out of his path. Just as he had blasted the presumptuous natives who opposed him.

Thumbing the hand weapon to full blast, he centered it on the faint shimmer ahead, and squeezed the trigger.

Let the meddlers look out for themselves.

Banasel winced a little as the fireball spread, then rose skyward, to form a large cloud.

"You could have relaxed," he protested. "The blast wouldn't have jolted our screen too much, and you could have gotten him again."

"I know." Lanko flicked off the gunnery switches and leaned back, rubbing his head. "There was a possibility, and I fully intended to relax. But the decision time was short, and frankly, those thoughts of his overrode me for just too long. That boy was dangerous!"

He turned to Genro Kir, who was looking with horrified fascination at the still growing cloud in the screen.

"It's unfortunate. We'll try to get your other partner alive."

"You destroyed him!" Kir looked a little sick.

"No. We didn't destroy him. He should have known better than to fire into a tractor. I'll have to admit, I did slip a little. I assumed he was

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the usual type of drone. I didn't recognize the full extent of his aberration."

Lanko got out of his chair, and crossed the room, to confront the prisoner.

"Look, Kir. I don't know whether your other partner's like that one or not. But I think it's about time you helped a little. If you had given us clues to Sira Nal's personality and probable location, we might have been able to take precautions. He might be with us now. Or, do you enjoy seeing your friends turn themselves into flaming clouds of smoke?"

"You mean I . . . I'm responsible . . . for that?"

"Partially. You helped them. You refused any assistance in their capture. And you knew they were going to be captured, one way or another."

Kir directed a horrified look at the screen.

"What can I do?"

"Get in contact with Koree Buron. Tell him what happened here. Tell him, too, that we're looking for him, and that there is a Sector Guardsman due to join us within a few hours. Explain to him that there will be direction-finders on him very soon, and that any effort he may make to use his body shield, his

weapons, or even his thought-radiations, will be noted, and will lead to him.

"Once you establish contact, we will ride in, if you wish. And we can assure him that he'll be either hunted down promptly, or he will have to assume and accept the role of a native—and a very inconspicuous, uninfluential native, at that.

"Tell him that he is free to come to us and surrender at any time within the next twenty hours, planetary. After that, he will be taken by the most expedient means. After the surrender deadline, you can assure him that his life will be of less importance to us, and to the Sector Guardsman, than that of the most humble native.

"Here's your mental amplifier, if you need it."

Genro Kir looked at the proffered circlet, then slowly extended a hand. He took the device, turned it around in his hands for a few moments, then put it on.

Suddenly, his face set in decision, and he sat quietly for a while, grim faced. At last, he looked up.

"I got him. He argued a little, but he had a poor argument, and he knew it. He'll be here within an hour, screens down."

THE END



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BY P. SCHUYLER MILLER

CONAN AND THE LENSMEN

I don't have much faith in the attempts of some critics to expose the neuroses of writers by psychoanalyzing their works. In the first place, it seems to me that a successful professional writer should be able to put into his stories whatever themes and attitudes will sell them, and that the same psychiatrist might come up with entirely different personalities if he were to analyze the works of Lewis Padgett, Lawrence O'Donnell and Henry Kuttner—or, for that matter, Don A. Stuart and John W. Campbell, Jr.

It also seems that equally imposing "experts" can come up with contradictory conclusions, depending on the school of psychiatry they happen to

follow, and that extremists among them produce some pretty ridiculous judgments. It can be argued, you know, that men have hunted with spears and arrows, not because the things are efficient weapons but because piercing objects are symbols of masculinity . . . and on the distaff side, the invention of pottery must be evidence of a world-wide fertility cult, since hollow objects aren't really handy containers for the family groceries but symbols of the eternal feminine. As for archaeologists' preoccupation with pottery . . . !

Be all that as it may—or may not—it does seem to me that two popular series of stories which have recently reached their conclusions illustrate rather well two opposing philosophies of Man's place among

his neighbors. I'm sure I don't need to explain that I am speaking of the late Robert E. Howard's chronicles of the bloody exploits of the antediluvian superman, Conan, and Dr. Edward E. Smith's equally bloody and even more fantastic yarns of smashing worlds in the far future, the "Lensman" series. The last volume of Conan stories, "Conan the Barbarian" (Gnome Press, 224 pp., \$3.00), is the second in chronological sequence: it came out late in the year. "Children of the Lens" (Fantasy Press, 293 pp., \$3.00) ran here as a serial in 1947 and '48 and has been revised to tie together all the loose threads and show the full pattern of the series, which began six volumes back in the rewritten "Triplanetary."

These two long series of stories represent in most readers' minds the penultimate in the pure action, thud-and-blunder, space-opera school of science fiction and fantasy. To those of you who take a sober view of the status and purpose of the field, they are arrant fantasy. To the more tolerant of you, they may both be science fiction. Call them what you will, readers look on them both as classics.

To me, the stories about the younger Conan, fresh out of the hills, are the best and most typical of the series: he seemed unhappy under the crown of Aquilonia in "Conan the Conqueror." In the five tales in "Conan the Barbarian" we follow him through about five years in the frontier kingdoms east of Koth and Shem—why in hob didn't Marty

Greenberg use the endpaper maps in these last two books?—fighting against brute opposition, conniving and black magic at every turn. In the third of the five stories, "A Witch Shall Be Born," is the famous episode which Conan's loyal followers will always remember as the symbol of their barbaric hero. Nailed to a cross by the evil Constantius of Koth, attacked by a swarm of vultures, Conan fights them off with his bare teeth—and the story gets under way.

Why this sort of thing became believable in Robert E. Howard's hands is something I won't try to explain, except that Howard believed in his hero and in the macabre world in which he fought. Howard, apparently, felt himself a person alone, and Conan is always the man alone, no matter what band of heroes or cutthroats he may be leading. Skillful as he is at fabricating swashbuckling yarns of this kind, Sprague de Camp has never quite managed to capture Howard's believability in the "lost" tales which he adapted for the Gnome series.

Conan, as I have said, is always the man alone, the hero who in the final showdown has only himself to rely upon. He is the counterpart of the lone hero in most of our detective stories and nearly all of our westerns, printed and screened . . . Shane, and the sheriff in "High Noon." He is Leif the Lucky and Columbus and Hemingway's "Old Man," and hundreds more. He stands, anthropologically, for the

"struggle for existence" view of Man's place and purpose as voiced by a long line of distinguished scientists and philosophers, from Haeckel to Sir Arthur Keith. In this view, history—and the future—is an elimination tournament in which the strongest or craftiest will one day stand alone.

In their way, Doc Smith's epic of the galaxies are just as bloody and fantastic as Conan's exploits, as the pure heroes of Civilization struggle to smash the black empire of Boskone. In this last of the series, all the forces which could be seen working dimly in the background of the original versions, and which are now spelled out in the books, reach their culmination in the five Third-Stage Lensmen who are the son and four red-headed daughters of Kim Kinnison and Clarrissa MacDougall—Christopher, Kathryn and Karen, Camilla and Constance. I'm afraid that none of them really emerge as characters, as to a degree Kinnison himself and the nonhuman Worsel of Velantia have done in the earlier books.

The trouble, as many and many another critic has pointed out over and over again, is that by this time superlatives have exhausted superlatives in the intergalactic slugging match between Good and Evil. A battle which, in the old "Skylark of Space" series or even in the early stages of the Lens saga, would have been good for the climax of a book is passed off here in a dozen lines.

And yet Doc Smith also believes in his hero, and somehow—especially in the first episodes in the original Astounding Science Fiction sequence, "Galactic Patrol" and "Gray Lensman"—communicates that belief to his readers. What is more, there is a common theme to the series, carefully built up and spelled out . . . and it is the antithesis of the philosophy of human history in "Conan."

Whether he feels it intuitively—I gather that the Smiths are a large and very closely knit family—or whether he is consciously following the school of thought expressed by such anthropologists as Rutgers' and UNESCO's Ashley Montagu, I don't know . . . but Doc Smith is saying that if he is to survive, Man cannot stay alone. Not only must a galactic Civilization be a union of many races and many species; there is internally, in all races which can be civilized, an inherent evolutionary drive toward coöperation and communion out of which will grow a greater power than any self-isolating hero or people can achieve.

In this last story the lesson is stated in black and white as the five "Children of the Lens," in whom are combined the traits of a planned breeding program which goes back to the roots of prehistory, learn the lesson which raises them at last above their Arisian teachers and become the Unit which can defeat Boskone. In their last battle they are, literally, Civilization itself . . . and this, so Dr. Montagu holds—in "On Being Human" and "Darwin: Com-

petition and Coöperation"—is also the lesson of evolution—that progress, and the goal of natural selection, is integration not fragmentation—that the whole will always be greater than the sum of its parts—that in that unimaginable future of which Doc Smith writes, the human species and not a man will indeed be Man.

This is a philosophy which many other writers have expressed in their science fiction. Not all aliens are by nature evil in today's stories. Yet by no means all anthropologists agree with Montagu's claim that coöperation is the determining drive in evolution, and the Conan theme is still legitimate. I find it a sign of the good health of science fiction that here, in this least self-conscious realm of pure entertainment—the space opera and its fantastic counterpart, the hero myth—we find simply expressed one of the basic dichotomies in the thinking of Mankind.

THE FORGOTTEN PLANET, by Murray Leinster. Gnome Press, New York. 1954. 177 pp. \$2.50.

Some of you old-timers may remember Murray Leinster's "Mad Planet" as one of the best short stories in the early years of the old *Amazing Stories*, and its sequel, "Red Dust," as almost as good. (They appeared in 1926 and '27, but Bradford Day's *Index on the Weird and Fantastic in Magazines* puts "Mad

Planet" in the June 12, 1920 *Argosy*, midway between Francis Stevens' "Claimed" and A. Merritt's "The Metal Monster," with "Red Dust" the following April 2nd.) At that time it seemed that they were laid on the Earth of a far future, when the insect world had become monstrous and Man was a fugitive mite.

Now, with a third story from *Science Fiction Plus* of 1953, these have been made into a coherent and fascinating unit. It's an even more successful integration than Simak's award-winning "City," though not quite the book.

The planet of the book is a nameless one, sterile until it was seeded with the first spores of life, "lost" for generations through a clerical error, and haven to the castaways of a wrecked star-ship whose descendants are driven back to less than savagery. Burl, the hero, is now one who reasserts his humanity by leading his people out of the insect-haunted morass to a better life. But it is still the horror of the insect world that one remembers—life as it might be in a tropical rain-forest on our own world, if we were dwarfed to ant-size. The monsters Burl fights are real: miniatures to us, nightmares to him and his people. And his genius and leadership are more reasonable than in most such yarns: he doesn't tame fire, invent the wheel, smelt iron, harness atomic energy, and cram his people into a star-ship—all from a standing start. He learns what a spear is good for, and he tries to

maintain his role as a big-shot . . . all the rest stems logically from those two things.

The old master is at his best in this one.



THE STAR BEAST, by Robert A. Heinlein. Charles Scribner's Sons, New York. 1954. 282 pp. \$2.50.

There's no story like a Heinlein story, even if you have to overcome the alleged stigma of a "juvenile" label to prove it to yourself. This is slightly amplified from the *Fantasy and Science Fiction* serial, "Lum-mox," and, of course, it's one of the best of 1954.

John Thomas Stuart XI acts a bit younger than Heinlein's junior heroes have been—doubtless the effect of good manners and a thoroughly poisonous if well-meaning Mom. That's offset by the determined Betty Sorenson, and doubly offset by the DepSpace (Department of Spatial Affairs), its Permanent Under Secretary, His Excellency the Right Honorable Henry Gladstone Kiku, M.A. (Oxon.), Litt. D. *honoris causa* (Capetown), O.B.E., his Chief of System Trade Intelligence, Sergei Greenberg, and that snaky-haired Diplomat of Deep Space, the Rargyllian Dr. Ftaeml.

Then there's LummoX, smuggled back from an uncharted corner of the galaxy by John Thomas Stuart VIII and coddled by the Stuart family for more than a century. This well-meaning, house-sized pup goes

for a stroll and tears a town in two. Law and Order are down on him; Betty is conniving; DepSpace is involved . . . and a ship appears out of nowhere, manned by an unknown, ultra-powerful race who maintain that someone from Earth has stolen one of their children.

All that disappoints me in this is Clifford Geary's pictures of LummoX, which are way below his own standard for the others in this Scribner series.



THE STORY OF MAN, by Carleton S. Coon. Alfred A. Knopf, New York. 1954. 437 + xii pp. \$6.75.

I don't want to belabor you with books on my personal hobbies, but this running story of the adventures and misadventures of Mankind from the Pliocene to the Iron Curtain is by far the best I have seen. It is written by one of the world's leading anthropologists who is also a star of the popular TV quiz, "What In the World?" in which he and his colleagues at the University of Pennsylvania Museum try to identify odds and ends of human artifacts from the Museum's sub-basements.

Dr. Coon is by no means orthodox in many of his views on controversial subjects, but he makes no bones about saying when a subject is controversial and what the orthodox point of view is. A professional reviewer has already called this the best general account of Neolithic Man in print—

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and the Neolithic was perhaps the most important stage in Man's history and prehistory.

You'll be surprised at a lot you read here: for example, science texts and science fiction to the contrary, that there's no evidence that Neanderthal Man had fire. You can get an argument started with many of the author's comments. But you'll find it fascinating and revealing. I hope you read it.



HUMAN? edited by Judith Merrill.
Lion Books, New York. 1954. 190 pp. 25¢.

I don't think Judith Merrill has ever edited a bad anthology, or even a so-so one, unless she did it under a pen name and it was published behind the Iron Curtain in an obscure Central Asian dialect. The fifteen stories in "Human?" span the gap from H. G. Wells to 1953, and include a Don Marquis lower-case interview between archie, the cockroach, and a ghost as well as more tangible uncertainties.

In the first third of the book, aliens look at us (poor creatures!). Here we have John D. MacDonald's account of the big spitting contest and Chad Oliver's of "The Boy Next Door" with his tall tales and his Uncle George; Eric Frank Russell in "Take a Seat" offers an object lesson against possessing others' bodies; Idris Seabright warns you against the club that offers "An Egg

a Month From All Over," and Algis Budrys tells what happened when precocious Phildee became "Riya's Foundling" in an alien universe.

The mid-section is occupied by even more varied folk: archie's dissertation on ghosts, for one; Fritz Leiber's ugly "Smoke Ghost" and Sprague de Camp's harassed Neanderthal "Gnarly Man" from *Unknown*; one of August Derleth's most pleasant unpleasanties, "Who Shall I Say Is Calling?"; H. G. Wells' story of an inhabited painting, "The Temptation of Harringay"; Theodore Sturgeon's "Ultimate Egoist," also from *Unknown*; and a John Collier bizarritty of the Indian rope-trick, "Rope Enough." Finally, pushing into the future relations among races and species, the book closes with Isaac Asimov's "Liar"! from his positronic robot series in this magazine; Graham Doar's "Who Knows His Brother," and Walter Miller's "Crucifixus Etiam," one of the best of 1953's or any year's ASF offerings.



THE CHALLENGE OF MAN'S FUTURE, by Harrison Brown. Viking Press, New York. 1954. 290 pp. Ill. \$3.75.

Some of the books on world-wide conservation problems have been successfully discredited because their authors have relied more on argument than on evidence. Here is what seems to me to be the most thorough-

ly documented book of its kind, a study by one of the world's leading geochemists—who has also been a professional pianist and band leader, was assistant director of the Oak Ridge plutonium project, and edits the "International Catalogue of Meteorites."

The author reviews each element in the population vs. resources impasse thoroughly: birth rates, food, energy, metals, and the rest. You may find this part tough going, but there will be surprises in it. That a sudden *surplus* of food may cause an unbalance and set up an oscillation in population that can lead to extinction; that on a hunting-fishing-gathering level about two square miles of land are needed to feed one person; that farmers in Eastern Asia get more than twice as many calories per acre out of the soil as farmers in the United States and Canada (much of our production goes into protein—meat—instead of cereals).

Of chief interest to science-fiction readers, perhaps, are his suggested alternatives for the future. By complete regimentation and industrialization of the economy of the entire world, Dr. Brown thinks, it can be made to support 50-100 billion persons. If war or depression brings our society down around our ears, industrial civilization is not likely to make a comeback: the world will remain agricultural, and on a standard of living like that of India and China—bare subsistence, with famine and disease the safety valves—it may support 5 billion. Our present pattern,

with the world half industrial, half agrarian, the author believes is inherently unstable. The agrarian world—when metals and power run out—is the most probable future. And no matter what the form of society, there must come an end to the growth of population—by intelligent control, by slaughter in war, by starvation, by disease. If you keep on blowing into a balloon, eventually it bursts . . .

This isn't easy reading, but it's very well worth your time and above all your thought.



STAR SHORT NOVELS, edited by
Frederik Pohl. Ballantine Books,
New York. 1954. 168 pp. \$2.00;
paper 35¢.

Ballantine has returned to its hard-bound editions for this collection of three original novelettes by two established science-fiction masters and one main-line author. Of the three—Jessamyn West with "Little Men," Lester del Rey with "For I Am a Jealous People!" and Theodore Sturgeon with "To Here and the Easel"—it seems to me that Del Rey comes off best and Miss West is plainly out of her depth.

To every "serious" writer there seems to come the urge to play around with one of the fascinating gimmicks which, to outsiders at least, stand for science fiction. Sometimes the result is excellent; sometimes it's embarrassing. This time

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there is no trace of the warmth of Jessamyn West's "The Friendly Persuasion" nor the macabre humanity of "The Witch Diggers" in her story of what happens when children are overnight swollen to the size of adults, most adults shrink to the dimensions of babies. True, there are flashes of ironic contrast as the "Smalfri" see the "Chilekings" reacting as they have been taught to react, and some insight into the differences between child and adult psychology, but it isn't carried far enough or ever made real.

Lester del Rey, on the other hand, makes very real the struggle of Reverend Amos Strong to readjust his entire life purpose to the horrible

discovery which dawns on him as he flees from an invasion from space. It's melodrama, perhaps, but melodrama made convincing.

And conviction is what is lacking in Sturgeon's fantasy of a painter who lives two simultaneous lives, one in present-day New York, the other as a fumbling knight-errant, cooped up by the magic of a sorcerer out of "Orlando Furioso." Sum total: mainly that if ever de Camp and Pratt want a third partner in the "Harold Shea" series, they can look up Sturgeon.

Good enough entertainment, but I don't think even the authors expect these to be among the memorable stories of 1954.

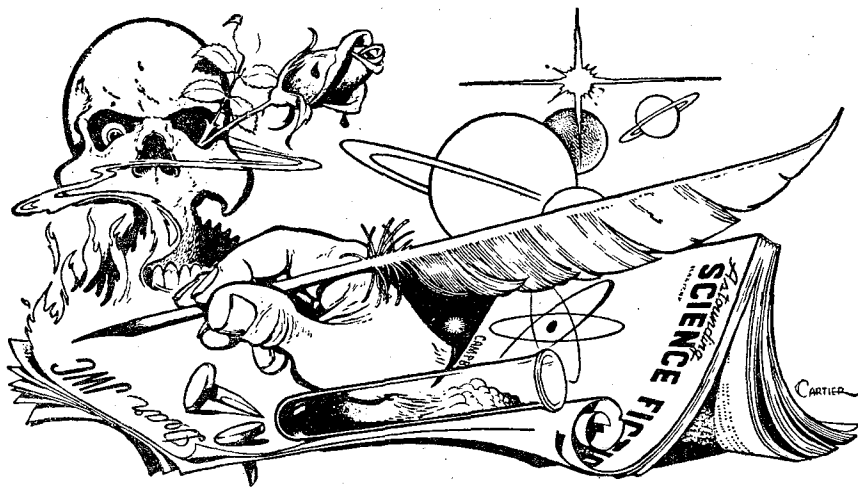
THE END

IN TIMES TO COME

Hm-m-m . . . looking at the line-up for next month, the top-line writers seem to have congregated in May. Isaac Asimov, and J. Francis McComas, and Everett Cole, plus some of the others—which I can't determine now because the exact space-requirements can't be stated now. Eric Frank Russell's got one that may come in May, otherwise in June, for example.

The cover next time, though, will be one of our very rare photographic pieces—and a lovely piece of work it is. By Paramount Pictures, with the coöperation of Chesley Bonestell, technical direction by Willy Ley. It ought to be good . . . and the theory is adequately born out. It's from the soon-to-be-released "Conquest of Space" based on the Ley-Bonestell book, which George Pal produced.

THE EDITOR.



BRASS TACKS

Dear Sir:

I found your December editorial very stimulating as it touches on many points with which I deal every day. It is true that there is increasing use of statistics in all fields, largely as an outcome of the war effort; but it is equally true that most statisticians recognize their field as a tool only. If they don't, they have not grasped the real extent of it. However, the research worker who currently uses statistics may indeed be misled by his delight in the new tool to think that "this is the way."

I think perhaps you confuse two types of problem which face the researcher. There is the so-called Natural Law type of problem involving the definition of a point. Here sta-

tistics is concerned only with errors of measurement. In the generalization case where statistics is most often used we are dealing with biological variation *plus* errors of measurement and, as might be expected, the tool is adjusted to the situation. One does not expect to pick up a two-ton truck with tweezers, but given the right equipment it is possible to pick it up.

I should also like to point out a fundamental difference between research on chemicals, atoms, et cetera, versus the living objects. The relationship between them is of the order of 1: multi-billions. If the atomic particle is basic and the atom fundamental, consider the complexity of something as biologically simple as an amoeba. Here is a vast collection

of atoms and your problem jumps from the single to the multitude and the tool has to adjust to it. If I want the properties of *an* atom, I would study an atom of given definition, and only one is necessary as all others of this definition are identical. But the properties of amoeba present a different face. No two are identical and so I must collect a group and try and sort out something relatively common. Your physiotherapist uses plenty of generalizations when dealing with his individuals; *but* he tacks on the usual plus or minus associated with any generalization—which I regret to say many researchers leave out—and so adjusts to his individual. I agree with you that the impression that only a statistical statement is respectable is wrong, but it is just as wrong to say that statistics is not to be used in a given manner of research. Your statistical tool is only what you make it and I, as a physicist turned statistician, have found it made of malleable metal.—Constance E. Cox, 316 Powell Avenue, Ottawa 1, Ontario, Canada.

Well—let's say you can't ring the bell if it's made of malleable metal. The amoeba's structure does follow laws, and we are looking for a point—the point of intersection of many laws, instead of only two laws. An equation system may have four hundred unknowns, and appear chaos at first—but work out the four hundred equations, and you can solve the system.

Dear Mr. Campbell:

As a consequence of the vistas opened up by Mr. Gunther's three articles on "Achilles and the Tortoise," there has been, around here at least—a snowball effect in thinking. One result is contemplation of a kind of thinking I can only call *correlative*. This involves consideration of various kinds of logic and their uses; basis for choosing the kind of logic to use for a given purpose, and especially the intuitionally arrived at bases or axioms of any logic. (This from Mr. Einstein's essays on science.)

The kind of thinking Einstein calls intuition, essential in choosing axiomatic bases of a logic, seems a very basic type of thinking which I believe is somewhat neglected. It has been described as the review of the myriad possible experiential observations and the choice of which to use. The choice must necessarily be limited, and the identification of that limitation seems to me important, because out of limitation comes paradox, and out of recognition of limitation comes resolution of paradox. So that attack on any unsolved or apparently insoluble problem depends upon primary consideration of it.

Such general or social problems as that of polio epidemics are of interest to everyone, not only to health engineers, and I think there is good reason to suppose that each of us "amateur" thinkers can do his part in the overall solution.

First the problem is usually stated

in very general terms, perhaps just idle wondering—"Why is there such a thing as a polio epidemic?" We all know what is said about sewage, swimming pools, possible virus, serums, et cetera, but these leave almost totally unanswered the question: "Why does it happen?" Next, a possible step would be to take a specific instance about which it would be possible to obtain some information, in order to speculate on the possible reasons.

In the town of S— there has recently been an unbelievably severe epidemic of polio. A friend wrote from there that feeling ran high and the tendency was to blame the one local doctor. Since it is ridiculous and futile to blame anyone for such a thing, it was suggested that aspects of personal and social responsibility be considered, and some general data gathered to indicate whether there could be any correlation between social, individual, and medical problems. What was the religious state of the people? The business and job situation? The educational system? The general feeling and temper? This in the nature of speculation could include anything at all, relevant or not. After all, at one time it was certainly a crackpot idea that the rat population had any correlation of value with the incidence of typhus.

Answer was made as follows, indicating that some of these things might profitably be further investigated.

S— is a port town, and depends for its very existence on dock work-

ers' salaries. About June, rumors started of a change in shipping methods which practically eliminate all dock work. From June on, business activity has plummeted and apathy has been all over the place. Until June, there had never been a case of polio in S—, and people are fond of saying, "If we ever get it, we'll get it bad."

Certainly much data is not included in this answer, and it might fairly be said that both question and answer were "loaded." But when you come right down to it, any question is, by the way it is stated. But, that it just might be profitable to ask is enough reason to ask it.

Anyone can go this far; general facts are easy to get and much can be drawn from them. What to do about it is another matter.

I remember some remarks made at the SFCon by one J. W. Campbell regarding a man who wanted to investigate correlation of personality factors with cancer. He had gone as far as the above, perhaps farther, and concluded that this investigation might indicate ways to arrive at some action toward bettering the cancer situation, but he had difficulty getting access to enough cases to gather statistics for proof that his tentative conclusion was either valid or invalid. He was not a "trained medical man" and so not acceptable to most clinics and hospital researches. This meant, of course, that he probably lacked much knowledge of effective scientific medical procedure—but it also meant that as an

amateur he had a great deal more freedom of imagination precisely because he was not trained into a narrow groove (a la John W. Campbell's ideas).

But that need not necessarily mean that he or you or I can do nothing whatever about such a situation. There are as many possibilities of action as a free imagination can dream up. General understanding of the correlation between social problems and medical can be increased by this kind of speculation, and put to use or test when occasion arises. One very valid and essential use is that of discussing such things with growing children. A very important part of their job of growing up is the gathering of tentative information for later test, and presenting many possibilities gives them much to go on. Most of their thinking must necessarily be intuitive, for it seems to me that the ability of logical thinking resides more in the mature personality than in the immature.

When children discover depression, famine, war and epidemic, they immediately ask "Why?" and according to the answers they get, number two question is usually around action—"Why don't we do so-and-so?" This is the basis for scientific understanding preparatory to changing an unsatisfactory situation. I have seen it happen that in the case of the consideration of epidemics, the third remark was "I'm not going to get it!"—and they didn't. Who is to say there is, or is not, a connection between that statement

and the subsequent action? It may be profitable to wonder.

A mature person comes into a social or economic situation which he obviously is not wholly responsible for, since it arises from the overall social structure and progress. But he is part of it, and from this, personal problems arise, such as how to stay alive and make a living for his dependents. Granted much in other fields must be done—if the docks in S— are now socially superfluous new industries must arise, there or elsewhere, because social structure is always built toward human needs. But, if he has become hopeless because he considers himself a longshoreman *and nothing else*, one possibility is that he has polio because of his own despair—that he has "solved" his personal problem by giving up all responsibility to others both to care for him and to solve the bigger problem. Obviously the first decision for him and each of us is to become whole so that we can each not only remove ourselves from the list of burdens on society, but also begin to act toward social solution. Any doctor will admit that the progress of many diseases seems to depend on a mysterious force sometimes called the Will To Live; completely unpredictable. Perhaps this is also true of *getting* the disease in the first place.

It is also incumbent upon existing social structures, such as medical research, to include in their bases of logic and operation just such possibilities as this. If a man can be helped to health through iron lungs, serums

and drugs, how sensible is it to eliminate categorically *any* means to further help him? Education as to how each human fits into the social structure built solely by the human race or portions of it, and what the possibilities of his various roles in it are, may very well be a crucial point.

And I think the more of us ordinary "amateur" thinkers stretch our brains with this or some other correlative type thinking, the sooner will a solution-activity arise.—Barbara Chandler, 10 Hazel, Larkspur, California.

Correction: I stated at the SFcon that a friend, a professional clinical psychologist, working on a grant from a major Foundation, seeking data on the possible psychogenic factors in cancer, had received a strongly negative reception from the medical staffs of many major hospitals. He was not an amateur. The difficulty seems to lie in the resistance one field of science shows toward free communication with other fields. That problem is acute, and seriously impedes actual achievement of potentially available results.

Dear JWC:

My ratings for the November issue are:

1. "The End of Summer."
2. "They'd Rather Be Right," (conclusion).
3. "A Matter of Monsters."

4. "Pilot's License."

5. "Helper."

6. (six!) "The Dip Stick."

To add to the argument presented by Mr. Alfred B. Mason, I entirely agree with him on Hypothesis No. 5. Supposing we aren't the first, the race that *is* first, at one time or another was as "primitive" as we are now. So we could just as likely be first.

So far as I know, that idea hasn't been used to its full possible extent. All privileges to Mr. Mason to use it.

I also agree to No. 6, suggested by JC, but it's been used several times already.

I really enjoyed Poul Anderson's article—those of you who weren't at the Convention in San Francisco missed meeting him and many other authors—"Those Hairy Ancestors." I was amazed at the misconceptions I thought were true. He certainly put me straight!

"They'd Rather Be Right" was excellent, although Algis Budrys' novelette was better. I may be a little rash, but I think "The End of Summer" would be another "Slan" if it were lengthened to a novel.

On the subject of ESP, there seems to be three main beliefs: (1) We are gradually being replaced by Homo Superior, no different from us physically, the only difference being that they possess certain "wild talents" such as cryptesthesia—telepathy, clairvoyance, et cetera—telekinesis, and teleportation—levitation falls into this category. (2) Everyone possesses these talents, but doesn't know how to control them. (3) Only certain

people have them to a high degree, much as some people can see or hear better than others. —William C. McCain, 180 Walker Road, West Orange, New Jersey.

My own bet is that everyone may have the potential, but only those who somehow learn to "tune" it —make it selective—can use it. A man who can differentiate light and dark, is still blind if he can't differentiate objects, can't focus the light rays he can sense.

Dear Mr. Campbell:

The December issue:

1. "The School," Raymond F. Jones . . . 8 points.

Its wordiness, the pouting of Gunderson over the fact that his new plane isn't as efficient a killer as he would like, and what seemed pointless complaints over the educational system made *this* the one that made me mad—"at first."

2. "On the Care and Breeding of Pigs," Rex Jatko . . . 8.

Is a professional of long standing hiding under a pseudonym? My enjoyment of this old or new master's story was hampered by the fact that I kept wondering what was supposed to make me mad. Granted that this intelligent story of the "seduction" of its not-so-intelligent but realistic hero to acceptance of the situation might offend some readers

because of its theme or the author's admirably conceived minor plot thread concerning pigs, why should the *end* change their minds?

3. "Pack Rat Planet," Frank Herbert . . . 6.

A bit too Asimovian for comfort. The story was good, though, if too colorful and too close to "Bridle and Saddle" and others, and I like the Library almost as much as the early First Foundation.

4. "Eight Seconds," M. C. Pease . . . 6.

5. "Special Effect," J. Anthony Ferlaine . . . 3.

Unconvincing.

The cover was pretty good Bonestell, which means excellent for anyone else.

"Personally I pay practically no attention" to letters by offended authors, but when they run to two and a half pages they are hard to ignore. If Verrill feels he is paying "practically no attention" to Miller's review, I'm relieved that he found it so exceptionally beneath mention. Then Miller, never a very concise writer, goes to work on a reply of about three and a half pages. By all means let them settle it if they must, but either more concisely, or somewhere else.

The past year:

1. "They'd Rather Be Right," Clifton & Riley . . . 10.
2. "The Cold Equations," Godwin . . . 10.
3. "Immigrant," Simak . . . 10.

4. "Martians, Go Home!" Brown . . . 9.
5. "Sucker Bait," Asimov . . . 9.
6. "At Death's End," Blish . . . 9.
The following are all 8 point stories:
7. "Question and Answer," Anderson.
8. "The School," Jones.
9. "'On the Care and Breeding of Pigs,'" Jatko.
10. "The Deviant," Cole.
11. "The Conners," Peattie.
12. "Welcome, Strangers!" Fyfe.
13. "In the Beginning," Klass.
14. "The End of Summer," Budrys.
15. "Weak Spot," Russell.
16. "Of Course," Oliver.

Like most of your readers, I tend to rate longer stories higher—the best short story, I think, places 10, and below it is only one novelette. I believe that 1954 showed a jump in quality. You are also printing more "human" stories. The best of these, of course, was Godwin's novelette, but the two best short stories, 10 and 11, were so concerned with their characters and so vague in background that many would even hesitate to call them science fiction. That, of course, is a trend that has been going on for a great many years.

Art, too, was excellent. With Freas working on every issue the average of quality of interior illustrations climbed sharply over that of any other year of ASF I have seen—back to '40. Almost every cover was excellent—Van Dongen's for "At Death's End," Pawelka's, Bonestell's,

and Freas' paintings for February, March, and August were all equal to the best covers of previous years.

To be brief, 1954's issues of *ASTOUNDING* *did* equal "Enjoyment to the Nth power!"

Thank you. —Richard Hodgens, 74 Willow Street, Glen Ridge, New Jersey.

They could have been more concise!

Dear Mr. Campbell:

So Mr. Carling—"The School," December ASF—was utterly incapable of teaching mathematics in any way that would not make it completely repulsive? "The subject held no fascination for him, and it was inconceivable that it should for anyone else."

Sounds reasonable, but— When I was in the equivalent of what you would call high school, I had the misfortune to be taught calculus by a man to whom it was inconceivable that mathematics, *per se*, should *not* be absorbingly interesting. At college, the mathematics lecturer was also a very able mathematician who felt just the same way about his subject. Now, no doubt these men were ideal teachers for those who in turn would feel just the same way about the subject, but to me mathematics was to be only a tool. Furthermore, any given part of the subject had to be learned before one ever got more than a vague idea of how it was to be used, and long before one actually

had to use it for anything concrete. This I, not being a born mathematician, found dull, boring and therefore difficult. However, the moment I came actually to need a particular mathematical operation, it became simple, understandable and very interesting.

I was trained as an electrical engineer, with strong private electronic leanings, and that is what I now do for a living (hah!) Now I have always liked engines of various descriptions, but for some reason I found heat engine theory dull and unreal. Lately, however, I have got all worked up about the neglect of the steam automobile, and I have even gone so far as to design an engine and boiler suitable for fitting in a sports car. (And what you can do with a four-cylinder compound engine with fifteen moving parts is an eye-opener for people who think that the latest 270 HP V-8 gasoline monstrosity, complete with chrome trim by the acre, spongy suspension, an absurdly complex mechanism for getting the power of a ridiculously fast-turning engine to the wheels, and brakes and steering gear so badly designed that they must be power assisted, is the last word. Well, it is, but I doubt if you'd print the word.) Anyway, Heat Engines, entropy and all, has suddenly become a curiously interesting and remarkably easy subject.

Perhaps the teacher shouldn't love his subject too much. But he should have the gift of making the usefulness of the apparently abstract sub-

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Now, where can you learn these so-called secrets? Well, there are many schools. I happen to be President of one of the oldest, and while I am naturally prejudiced, I honestly believe we have the best course and the most helpful instructors in the business. Our students and graduates say the same thing. True, not everyone succeeds, but many sell when only halfway through the course, and many more become full-time professional selling writers.

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(Advertisement)

BRASS TACKS

155

ject he's teaching plain to engineering students.

Why on earth should anyone object to anything in "On the Care and Breeding of Pigs"? If I had any objections, they would be on the ground that it was all so obvious; in the given circumstances, obviously moral standards must be drastically revised, and equally obviously some people wouldn't adapt too easily to the new requirements. The sole dramatic interest of the piece lay in the fact that the Puritan happened to be one of the two males; if it had been one of the comparatively large number of females there would have been even less story than there was. I suppose you are expecting a large number of Moral Judgments to descend on your office, and maybe you'll get them. (I'd love to read 'em, for laughs.) When will people realize that what may be morally reprehensible in one set of circumstances may, in others, be the only morally justified course of action—that there's nothing, not even the precious moral code that is Eternal or Unchanging on this earth? I'll stick to "Thou shalt not kill," though, so long as I have any choice in the matter—I'm trying to fool myself, in the face of all history, that the job I'm doing will help prevent a war. Ha-ha. —C. F. Kerry Gaulder, 72 James Street North, Hamilton, Ontario, Canada.

In essence, your mathematics teachers didn't find the line of approach to the subject that would make it interesting to you. Then, like

Jones, you can object that the teacher didn't teach efficiently—in a way that made the student want to know. It depends on your background orientation—as does the effect "Care and Breeding of Pigs" has on one. Believe me, some do get angry!

Dear Mr. Campbell:

Mr. Davidson—Brass Tacks, December—would seem to be woefully ignorant of the true state of mathematics in the ancient world. I would like to refer him to Ore's "Number Theory and Its History"; specifically to the part of that work referring to the Plimpton mathematical tablet 332 in the Columbia University Library. This tablet, written in the Old Babylonian script, and thus at least 1600 years B.C., is a list of Pythagorean triangles so arranged as to be used as a trigonometric table. If Mr. Davidson believes that the (3-4-5) rule is the result of guess-work, let him attempt to guess at the (12,709-13,500-18,541) rule.

This triangle is primitive.

As for the engineering use of the (3-4-5) rule, there are many far better methods of erecting a perpendicular. —Richard George, 2542 Campbell Road, N.W., Albuquerque, New Mexico.

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READERS' SERVICE BOOK CLUB

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*B.C., engineering civilization was
already some 3,000 years old!*

Dear Mr. Campbell:

Raymond Jones—"The School," ASF, Dec. 1954—has one of his characters, a Dr. Spindem, make what I consider to be an extremely important remark: (in effect) "The constant pre-occupation of our society... (in a)... search for supernatural faculties and functions of the human mind... is pathological in the extreme. We yearn for... anything to circumscribe the necessity for utilizing and perfecting the conventional means at our disposal. It is much too hard labor to... (perfect) vocal and written means of exchange. If we only had super powers, such as telepathy—presto!—all our difficulties would be over."

Inasmuch as the good doctor is not a particularly sympathetic char-

acter in the story and, further, since his remark is not a particularly pleasant one to accept, I think many of us may tend to dismiss the doctor and his ideas as reflecting those conventional, and rather pompous, people and phrases we heard at our high school graduation exercises. Or worse, exile him to the realms of those of little faith, those scoffers who jeered the Wright brothers, etcetera, etcetera, while *we*—we enlightened ones—have the imagination and courage to look forward to chrome-plated tomorrows when the gods of super-science shall reign supreme.

To be sure, we readers of science fiction look forward to new discoveries, devices and ideas which may make us really improved people. (And consider here the different estimates of that word "improved" which might be given, say, by a Hindu mystic, a physical culturalist, and a college president.) Why can't we have

a lovely, impersonal, mechanical Father - confessor - analyst - Mirror, which we can look into and gain the insight to cure our neuroses and psychoses? Why, indeed, can't we have an awe-inspiring electronic apparatus by means of which we can clamp electrodes to our scalps and project our own symphonic compositions—magnificent, of course—onto screens, or tape recorders? Or, to be more immediate, why can't we plug a device in our ears on retiring and wake up next morning reciting Homeric odes or pages out of textbooks on Quantum Mechanics?

Perhaps we can; I for one certainly have a healthy respect for those wonderful people who stand for the "they" in the phrase, "What won't they think of next!" But supposing this comes to pass, then what? I propose that this will all be fine to pour *on top* of a sound basic education, but that basic education will still be necessary, and the only way to acquire it will be by the terribly conventional means of hard study and work.

Mr. Jones has bitten off a small chunk of the tremendous dual problems of education and advancement in our society—race, culture, civilization, what have you. It is worth reading the story a second time to understand precisely the issues he raises, and how they are solved. But it is also worth remembering that (1954) this means of solution is not available to us.

Public school teachers and officials

have, for the last several decades, been gradually strangled with the concept that the three R's went out with the horse and buggy, and that Junior must be educated for citizenship in a democratic world, or some other such dreamy notion that, for some reason, seems to involve an almost total ignorance of mathematics and the English—or any other—language. Thus many people who may feel that their own elementary and secondary educations left much to be desired, nevertheless feel that, for different reasons, the present generation of high school seniors and college freshmen are also finding themselves almost hopelessly inadequately prepared. Perhaps it is natural that we should cast about for some mechanical means of remedying the situation.

Meanwhile, until machines and methods are brought forward to help us realize the "royal road to learning," I suggest that the people most likely to invent those methods and machines will be those well grounded in basic sciences, and not those merely dreaming or hoping that these easy paths will be found. I do not think anyone seriously proposes that we shall learn to pull ourselves up by our own bootstraps. —Mac Patterson, Box 922, Quincy, Washington.

Jones' point was that we must have the three R's—but must go beyond. Only men already highly trained entered his school!

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(Continued from page 7)

and another \$100,000 they'll be bankrupt. Research is a gamble; they are certain that success will yield them returns in the tens of millions. What to do . . . ?

Research can, also, be a quicksand-like trap, sucking in more and more—

Companies and governmental agencies and private laboratories can handle much research—but there is one type of research that never has been, and never will be, handled by any sound, sane professional research outfit. And the stinger on that item is this: *it is the most essential of all types of research!*

No sane man would commit his life-work, his savings, his major efforts, to a project with *no* determinable probability of success. Any research director who committed his laboratory to research on something that wasn't known to exist, probably wouldn't be useful if it did exist, and would be very difficult to produce, taking many years of effort, if it could be produced at all . . . is off his rocker. A company that announced to

its stockholders that the entire capital of the company was being put into a project to duplicate the driving mechanism of flying saucers—would *very* shortly have a new board of directors.

But, you see, that is precisely the nature of the most fundamental of all types of research! That's basic research—research that concerns itself with whether something totally unknown might exist, though its existence, even if proven, would be utterly useless as far as anyone can imagine. It's research into the utterly, hopelessly, impractically unknown.

That always has been, and always will be done by dilettantes and amateurs. It'll be done by crackpots, too—men who have somehow gotten a conviction that “zeta rays” do exist, and they're going to make millions on them, and devote everything they've got to the research. The man's a crackpot all right; it's not sound to invest everything you've got on such a long gamble. The inevitable consequence is that ninety-nine crackpots out of one hundred go broke, and go into oblivion. The hundredth crackpot, of course, turns up with his

zed-ray machine, and makes millions on it, and everybody knows that *he* wasn't a crackpot—*he* was a genius, with greater vision than ordinary men have.

He was a crackpot too. Just because a man succeeds in getting over Niagara Falls in a barrel without getting killed does *not* prove he was wise to try it. If you threw ten million nickles into the air, one of them might land on edge and stand that way; it's the first time *that* nickle tried it, isn't it? Proves that when that nickle falls, it lands on edge, doesn't it? A successful crackpot is still a crackpot.

The dilettante, the amateur, the hobbyist—these are the sources of truly fundamental and basic research. You *can* afford to risk a certain proportion of your total effort output, even if the thing turns out to be a dead loss, if you're enjoying the process of trying. The hobbyist gets reward from the process of trying; if he never, in all the years he tries, makes any actual progress whatever, and, over the years, spends \$100,000 on it—he is, none the less, a wise, sane researcher. He didn't try to be a professional; he made his living in a sound, appropriate-degree-of-risk business, and simply spent his entertainment budget on a research project. When the maximum possible loss is zero, and the net cost of research is zero (because it can all be properly charged off to relaxation!)*, and it is diverting no socially-needed efforts from the world (because relaxation is essential to a healthy mind)—why,

any research which does not have absolutely zero probability of reward will be profitable to the society! And *no* research has *zero* probability of reward; even if the researcher is headed dead-center for absolutely the wrong direction, he may drop a soldering iron into his glue pot and stumble on a new super-plastic. After all, Goodyear finally vulcanized rubber because he was a bit sloppy, and dropped some of his infernal goo on a hot stove.

The hot-rodders are one example of the hobby researchers; that's their entertainment, and if they never get a nickle return, while spending thousands of dollars—they're getting full reward for their effort. It's perfectly obvious that no professional system can possibly compete with the hobby researchers; the professional can't take the insane research gamble of large investment over many years for no predictable reward. What would be sheer lunacy for a professional is, on the contrary, the best of good sense for the amateur!

The professional researcher is inherently limited to the area of predictable rewards. He's thereby limited in another respect—and I suggest this is an extremely important problem of the world today. Because this limitation is one that can't be broken by amateurs or anyone else—it's the limitation of excessive initial investment.

The hot-rodders can do a wonderful job of automotive engineering research. The radio hams can do some magnificent probing into long-

distance radio-wave reflections. But no amateur can set up a \$50,000,000 nuclear reactor in his basement as a hobby.

Already, the cost of a research unit in many fields has reached so fantastic a figure that even great industrial companies can't afford the initial investment—it takes the immense power of the wealthiest human group-unit on the planet to swing the job; the United States Government.

There's a limit, I suggest. When each new gain made costs another hundred millions, and occupies the full time efforts of hundreds of the nation's most effective human units—there comes a point where it's still true that "there's much more to be discovered," but there isn't much more we can *afford* to discover. "A few more such victories over Nature and we are ruined," to misquote an unhappy victor of long ago.

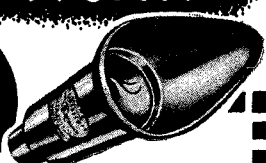
It's perfectly true that the possible developments of physical science are, in principle, unlimited. It's also true that, in principle, you can make a cylinder of perfectly reflective material, with a perfectly reflective piston, and pump radiation. Let's see you do it!

It's perfectly true that animals larger than Man can be structured of flesh and bone—the dinosaurs proved it long ago. The whales are much bigger yet. It *can* be done—but *should* it? Purely physical approaches to progress *can* be continued indefinitely, in principle at least. But . . . *should* they?

The curve of progress in the physical sciences is, assuredly, still rising rapidly. But I wonder how fast the curve of human-effort-invested-per-discovery-achieved is rising? Germany, France, England—the great European sources of science—have fallen far behind in the last few decades. Pencil and paper and the simple apparatus of Lord Rutherford are by-gones now; no real progress can be reliably predicted except with the aid of immense computer machines, nuclear reactors, and bevatron type equipment. And only the fantastically wealthy United States has ever been

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able to afford an adequate supply of such laboratory hardware.

But there's another angle, too. We've got data, now—oceans of data. With the modern methods of data gathering and recording, photographic, magnetic tape, automatic scribes, electronic typewriters, telemetering channels, and all, science is accumulating data most fantastically. Of course, the great electronic computer systems, with their automatic data-reducing capabilities, have been able to winnow some of the useful information from this stupendous input of information. But even they are groggy from the load.

The human beings who seek to keep up with the technical fields—the professional experts—find themselves slowly submerging in a sea of professional journals.

It just might be we've about reached the end of this line of development. It isn't that we've run out of science to discover—but maybe we've run out of discoverable science. The Scientific Method has served us magnificently—but, like any method (I know this is heresy!) it has its limitations.

The professional researchers are, necessarily, stuck with the system; there is no *predictable* alternative, and no sane professional research can be carried on on an unpredictable hope. Whatever new advances, whatever new method of research, may be developed—the dilettante, the amateur, the hobbyist will have to do it.

Before the Scientific Method was discovered, the only available meth-

ods of learning anything were by Revelation or Intuition—by the method of the lightning-stroke of inspiration. Mighty useful method it was, too. The human beings who lived in that time no doubt felt it could solve all problems, given time, and that no better method of solving problems could be imagined. (If we waited enough millions of years, quite a few inspirations would strike, and many valid intuitions would occur.)

I don't say I know any method that could be as good as, let alone be better than, the scientific method. I don't; if I did I'd use it. I simply suggest that the Scientific Method of analyzing the data seems to indicate that the Scientific Method is about bogged down. Having been brought up in the Scientific Method, I like it. But I can still have a strong feeling that it's getting rather old, fat, bulgy, and anything but agile. I don't think we can reliably predict a successful continuation along the present line of development for many more decades. After all, when "an experimental nuclear device" as of 1954 causes us to report, "one of our islands is missing," even if we do have an economy that can afford further development—do we have a planet capable of standing it?

Maybe what we need is not so many amateur scientists, and more amateur psionists, or something. I don't know what to head toward—but I do feel that this generation of Man is in need of heading outward beyond the Scientific Method.

THE EDITOR.

—Continued from other side

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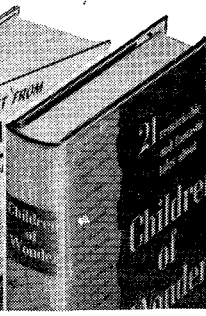
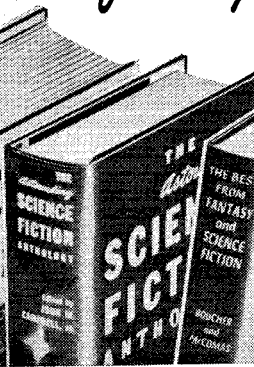
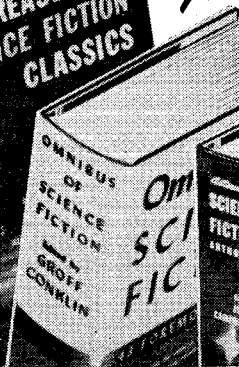
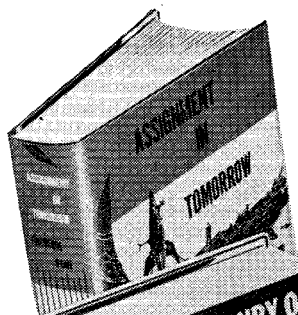
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